

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

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INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather over the lower mainland and islands of British Columbia was comparatively mild up to the 18th when it turned somewhat colder and sharp frost was frequently recorded up to the end of the month. Much precipitation was recorded in most districts, rain or snow occurring almost daily up to and including the 18th. After this date somewhat brighter weather prevailed, but it was not devoid of rain and the total amount of cloud of the month was above the average. Over the upper mainland there was a marked fall in the temperature on the 18th and the precipitation though varying considerably in amount in contiguous districts was excessive at most places. The proportion of bright sunshine was below the average in this portion of the Province. Many garden flowers were still in bloom on the 31st in districts near the coast.

In the North-west Territories the weather was comparatively mild from the 1st to the 13th and the temperature of the month was considerably in excess of the average. Throughout the month there was much bright sunshine and the precipitation, which varied considerably at the different stations, occurred chiefly during the second half. Some severe gales were recorded when the snow was much drifted, but they were of short duration. Much of the snow which fell was melted and in some localities the ground was bare, sleighing however was possible in most districts.

In most districts in Manitoba the weather was somewhat less cold than usual, more especially from the 3rd to the 15th when on several days the temperature was near the freezing point. Exceedingly cold weather occurred about the 24th when temperatures from 40° to 45° below zero were recorded at some places. Throughout the month there was much bright sunshine and in most districts the precipitation was below the average. Sleighing was possible in most localities.

In Ontario the weather was exceedingly cold, more especially from the 2nd to 5th, 17th to 19th, and 24th to 30th when temperatures from 30° to 40° below zero were frequently recorded in northern districts. Much snow and little rain characterised the weather of January, and the unusual absence of thaws allowed an abnormal accumulation of the former; the depth in some localities exceeded four feet. In Algoma, however, where the snow fall was light, the depth on the 31st was much less than in other portions of the Province. High winds were of frequent occurrence, causing heavy drifts of snow and demoralising railroad traffic on many days. Bright sunshine was generally below the average, but in the vicinity of Toronto and Lindsay it was above. Ice on rivers and lakes was from 16 to 30 inches in thickness.

In the Province of Quebec, as in Ontario, the weather was exceedingly cold the low temperatures coupled with frequent high winds, adding to its apparent intensity. On the 1st after a light fall of snow the temperature at night fell below zero and did not rise above it until the 5th,—20° to—24° being recorded at many places. On the 18th and 19th from 4° to 24° below zero was recorded and from the 25th to 30th temperatures well below zero were also general. Light falls of snow occurred frequently, and on the 13th and 14th, also on the 22nd, there were comparatively heavy falls, nevertheless the total amount was below the average. Much cloudiness prevailed and the proportion of bright sunshine was below the average.

The weather in New Brunswick was exceedingly cold throughout the greater portion of the month, the temperature almost every night falling well below zero from the 1st to the 7th and 17th to 30th, also during the day on the 2nd, 3rd, and 4th, 19th and 20th, at most stations. Much cloudiness prevailed, but the precipitation was comparatively light. Somewhat heavy falls of snow occurred on the 3rd, 10th, and 23rd, rain also being recorded on the latter date near the Bay of Fundy. Good sleighing was general throughout the month.

In Nova Scotia the weather was unusually cold more especially from the 2nd to the 5th, 18th to 22nd and 31st when temperatures below zero were recorded on nearly every night. In southern districts the

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precipitation was excessive whilst at most northern stations it was generally below the average. Rain occurred at some places on the 12th, 23rd and 26th, but the precipitation being chiefly snow there was good sleighing throughout the month.

The weather in Prince Edward Island followed much the same sequence as in New Brunswick, it being exceedingly cold from the 1st to the 6th and 18th to 30th when temperatures well below zero were recorded almost nightly. The precipitation which was light was mostly snow, but rain occurred on the 15th and 24th. The amount of sunshine was generally below the average—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for January was subnormal over the North-west Territories and average or above over all other portions of Canada. The largest positive departure was 0.13 of an inch at Victoria, B.C., and the largest negative departure, 0.07 of an inch at Calgary, Alta.

HIGH AREAS.

During January nine areas of high pressure were tracked, four of which were first observed in the far north-west of Canada and four further south over the Pacific States, while one first appeared north of Lake Superior and moved eastward.

Of the areas from the North-west, two moved south-eastward, passing over Manitoba and the Great Lakes, while two took a more northerly path. All four were accompanied by remarkable cold waves. The areas from the Pacific States passed south-eastward towards Texas, three of them then eastward and off the South Atlantic Coast, while the fourth took a more north-easterly direction and passed over New England. This latter was associated with fairly cold weather in Quebec and the Maritime Provinces, but the other three did not greatly influence the Canadian weather.

LOW AREAS.

Sixteen areas of cyclonic formation passed over the continent during January, the majority being of marked intensity and first observed over British Columbia or the North-west Territories. Of the areas first observed in other districts, four were entirely independent of the North-west, but the others became subsidiary to the main movement.

The general path followed was eastward over the great Lakes to the Gulf of St. Lawrence. Two areas were local in the North-west Territories and Manitoba, and two lost their identity while over Ontario.

The precipitation which accompanied the low areas was, for the most part, in the form of snow, and gales were of rather frequent occurrence as the depressions passed over the Maritime Provinces.

Of the independent areas, No. 2 was most energetic. It appeared over Texas during the 1st and moved north-eastward developing much energy, and passed southward of Nova Scotia on the 3rd, and thence on the 4th over Newfoundland. It was accompanied by heavy snowfalls and gales in the Maritime Provinces. No. 11 was typical of the general movement of the month, and was one of the most important areas. On the 13th it appeared over British Columbia and travelled rapidly eastward over the Great Lakes, and subsequently off the Cape Breton Coast on the 17th. Snowfalls accompanied it throughout its course, and in the Maritime Provinces heavy gales occurred. No. 16 was the most remarkable of the erratic areas. After hovering over the North-west Territories and Manitoba during the 28th and 29th, it moved southward to Nebraska, thence north-eastward to Lake Superior and then in a general easterly direction to the Gulf of St. Lawrence, reaching there on February 1st. As this area passed over Quebec and the Maritime Provinces, it showed two foci, which united over the Gulf of St. Lawrence with a barometer reading reduced to sea level, of 28.90 inches, and on the 2nd of 28.40 inches. Gales occurred in the Maritime Provinces during its presence.

WINDS.

On Vancouver Island and over the mainland of British Columbia, the winds were variable, no one direction being paramount. There were six days with fresh and eleven with strong breezes, the latter reaching on four days the force of a gale.

In the North-west Territories the direction was largely westerly inclined slightly to southerly. Fresh breezes prevailed on twelve days and strong on fifteen attaining to the force of a gale on four days.

In Manitoba the direction was mainly westerly. On eight days fresh and on thirteen strong breezes were experienced including four days on which the strength of a gale was recorded.

In the Lake Region the west and north directions predominated. There were seven days with fresh and fifteen with strong breezes reaching gale force on eight days.

In the Ottawa Valley and the Upper St. Lawrence the west and north directions were also most in evidence with four days of fresh and eighteen of strong breezes, gale force being often experienced.

In the Lower St. Lawrence Valley and in the Gulf of St. Lawrence, the directions were chiefly between the west and north. There were four days of fresh and fifteen of strong breezes, gale force being frequent.

In the Maritime Provinces the direction was very largely westerly to northerly, with twelve days of fresh and fourteen of strong breezes including seven gales. There, where in many localities winter navigation was pursued the gales occurred between the 3rd and 5th, on the 9th, 14th, 17th, 22nd, 25th, and on the 27th. The storms of the 9th and 25th were not warned and a cautionary warning issued on the 29th was not subsequently justified by high winds. The other storms of the month were all amply warned. The most severe general gale of the month was the storm between the 3rd and 5th.

BRIGHT SUNSHINE.

The amount of bright sunshine recorded during January was deficient except in the North-west Territories and locally in Ontario. There was a range of departure from average of 26 per cent, the extremes being —40 per cent at Battleford, N. W. T. and —16 per cent at Montreal, Que. The greatest amount registered was 44 per cent of the possible at Battleford, N. W. T. and the least, 10 per cent at Victoria, B. C.

TEMPERATURE.

The temperature was below the average from the western portion of Lake Superior to the Maritime Provinces and very much below in many localities, especially in the Georgian Bay district, the Lower Lake region and the Ottawa and Upper St. Lawrence Valleys, where the negative departures ranged from 5 to 12 degrees. In the Maritime Provinces the departure was from 3 to 5 degrees, and in Quebec from 1 to 5 degrees. British Columbia was generally above the average, while from the Rocky Mountain east to Lake Superior the temperature was everywhere above the average, Manitoba giving a positive departure of 3 to 4 degrees and the Territories from 3 to 9 degrees, the maxima positive departures occurring in Alberta and Southwestern Assiniboia.

The Highest and Lowest temperatures in each Province during January, 1907, were:

British Columbia,	65°·0 on 14th at Spence's Bridge.	—16°·1 on 19th at Stuart's Lake.
North-west Territories,	62°·0 on 6th at Onion Lake.	—17°·0 on 24th at Indian Head.
Manitoba,	38°·0 on 7th at Minnedosa.	—14°·0 on 21th at Treherne.
Ontario,	52°·6 on 16th at Guelph.	—46°·0 on 28th at White River.
Quebec,	37°·6 on 23rd at Sherbrooke.	—16°·7 on 3rd at Chicoutimi.
New Brunswick,	44°·0 on 14th at Sussex.	—32°·0 on 4th at St. Stephens.
Nova Scotia,	48°·0 on 15th at Wolfville.	—26°·2 on 4th at Truro.
Prince Edward Island,	39°·3 on 14th at Charlottetown.	—16°·2 on 4th at Charlottetown.

PRECIPITATION.

The precipitation was above the average over British Columbia, except in parts of Vancouver Island, the positive departures being pronounced at the interior stations. In the Territories, Manitoba, and Nova Scotia, the average was also locally exceeded. The south-western counties of Ontario likewise recorded a positive departure, but elsewhere in Canada the precipitation was not equal to the average amount, the negative departures ranging from a few tenths of an inch to an inch and a-half. The snowfall in many portions of Ontario exceeded the usual quantity, also in some sections of the Maritime Provinces, but the rainfall, especially in the former Province, was much below the average amount.

DEPTH OF SNOW ON GROUND.

At the close of the month, deep snow covered the Dominion from the Lake Superior region to the Atlantic Coast. In Ontario, and to a lesser extent in the Maritime Provinces, the depth in many localities was phenomenal. This was not so much owing to the heavy snowfalls of the month, although locally these were pronounced, but more to the accumulation of snow from the early part of the winter, caused by the absence of rain and thaws. The preponderance of high winds also caused serious drifting generally, greatly hampering railway and all kinds of travel. In Ontario the depth ranged from 16 inches on the shores of Lake Erie and Ontario, to 30, 40, and 50 inches in the interior, and even locally to much more. In Quebec it was about 28 inches, and in the Maritime Provinces from a few inches at places along the coast, to 30 inches and over, more inland. To the westward of Lake Superior the amount of snow on the ground was for the most part very moderate, except in the Qu'Appelle Valley and in Northern Cariboo, where it was reported respectively as 30 and 36 inches. The southern portions of Alberta and Western Assiniboia apparently had no snow on the ground.

THICKNESS OF ICE.

NORTH-WEST TERRITORIES.—Battleford, 28 inches; Medicine Hat, 12 inches; Swift Current, 29 inches.

ONTARIO.—Port Arthur, 30 inches; Parry Sound, 14 inches; Southampton, 16 inches; Port Stanley, 24 inches; Kingston, 16 inches; Ottawa, 30 inches; Bissett, 20 inches; Toronto, 18 inches; Paris, 30 inches; Hamilton, 24 inches; Midland, 22 inches; Birnam, 22 inches.

MARITIME PROVINCES.—Chatham, 22 inches; Yarmouth, 12 inches; Charlottetown, 15 inches; Fredericton, 28 inches.

QUEBEC		187	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0	060	33	18	11	0	0				
Montreal...		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Rome		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Quebec		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Chicoutimi		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Father Point		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Cape Chatte		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Berquette		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Cape Magdalen		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Anticosti, W. Point		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Anticosti, S.W. Point		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Abitibi		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Anticosti, E. Point		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Perce		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
St. Agathe des Monts		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Roberval		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Shawinigan Falls		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Clark City		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Sherbrooke		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
NEW BRUNSWICK		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Fredericton		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Chatham		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Grand Manan		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Point Lepreau		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
St. John		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Dalhousie		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
St. Stephen		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Moncton		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
SUSSEX		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
NOVA SCOTIA		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Halifax		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Sydney		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Truro		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Yarmouth		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Pictou		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Port Hastings		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Whitehead		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Sable Island, E. Point		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Sable Island, W. Station		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Parrishore		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Woolville		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Bridgetown		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Windsor		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
P. E. ISLAND		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12	39	165	30	63	50	131	180	105	0	741	167	320	48W	345	0 <td>060<td>33</td><td>18</td><td>11</td><td>0<td>0</td></td></td>	060 <td>33</td> <td>18</td> <td>11</td> <td>0<td>0</td></td>	33	18	11	0 <td>0</td>	0
Charlottetown		15	30	73	35	157	30	08	30	96	29	21	175	82	6	12																					

PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
JANUARY, 1904.

STATIONS.	RAIN FALL.					SNOWFALL.					REMARKS.
	Amount in inches.	No. of Days of or Over.	No. of Fair Days.	Heaviest Fall in Month.	Date.	Amount in inches.	No. of Days.	Heaviest Fall in Month.	Date.		
BRITISH COLUMBIA—											
Kuper Island.	7.66	21	8	1.40	8	5.0	2	3.0	20	Fog 22nd, 27th.	
Goldstream Lake.	8.70	24	3	2.04	13	21.0	6	6.5	9		
Naas Harbour.	3.21	4	14	1.55	7	68.0	13	12.0	26		
Port Essington.	13.67	14	3	4.13	7	71.9	15	36.0	21-25		
Royal Oak.	6.12	20	9	1.10	11	4.0	4	1.5	19		
Couquitlam.	12.19	16	15	1.57	7	13.0	3	13.0	18-20		
Sooke Lake.	11.53	18	11	2.69	13	8.0	5	3.0	10	24th First ice.	
Nanaimo.	8.38	17	14	2.32	7	4.0	1	4.0	20		
N. W. TERRITORIES—											
Bruderheim.						6.0	4	2.8	16		
Salteoats.						4.0	4	1.0	17		
Innisfail.						2.3	6	0.8	21		
Coutts.											
Beaver Hills, W.	0.01	1	21	0.01	29	15.5	9	3.8	31	—28° on 19th.	
Willow Bunch.						8.2	5	4.0	31		
Regina.						5.4	8	2.0	30	Fog, 1 2.	
Foxleigh.	R			R	6	6.8	7	3.5	17		
Lacombe.						5.0	6	1.5	18		
Victoria.	R			R	29	16.0	7	5.0	17	20th, —50°, 23rd, —50°.	
Stirling.							3				
White-wood.						3.5	3	2.0	17		
Dirt Hills.						16.0	8	4.0	28		
Beaver Hills, E.	0.20	1	27	0.20	29	7.3	3	4.0	17		
MANITOBA—											
Norquay.						6.5	5	3.0	14	24th, —50°.	
Morden.	R			R	7	3.7	6	1.5	13		
Rapid City.						5.0	8	3.0	18		
Gretina.	R			R	7	7.3	5	3.0	17		
Belmont.							3				
Oakdale Park.			26			3.5	2	3.0	16		
Deloraine.			21			16.5	9	2.0	17		
ONTARIO—											
Dutton.	0.50	1	20	0.50	21	20.5	10	6.0	20	4th, —35°.	
Midland.			23			19.0	8	4.0	16		
Uxas.	0.16	1	17	0.16	22	41.0	14	7.0	13		
Dealtown.	2.78	4	18	1.23	22	11.5	9	5.5	26		
Warton.			21			15.8	10	3.0	30		
Niagara Falls.	0.35	1	23	0.35	22	20.0	7	6.0	15		
Aurora.	1.09	1	17	0.09	22	19.0	13	6.9	13		
Orangeville.	0.12	1	14	0.12	22	37.6	17	6.2	14		
Watford.	0.50	1		0.50	19	No record.					
Ennisville.			27			8.0	4	3.0	13		
Scarboro.	0.33	1	19	0.33	22	12.4	12	5.5	13		
Croydon.	0.05	1	26	0.05	1	27.0	5	10.0	14		
Parma.	0.25	1	21	0.25	23	38.0	10	12.0	14	19th, —32°.	
Smith's Falls.						20.0	7	15.0	13		
Arden.	0.58	2	22	0.34	23	32.0	10	6.0	17		
Jernyn.	0.45	2	26	0.35	23	15.0	3	8.0	13		
Westminster.			21			24.0	10	5.0	13		
Oliver's Ferry.			23			26.0	8	12.0	13		
Lansdowne.			26			20.5	5	17.0	12		
Huntsville.	0.06	1	19	0.06	22	28.0	10	4.5	8		
Westport.			13			49.8	18	8.0	13		
Providence Bay.			17			26.5	14	8.0	24		
Emisdale.			14			22.5	14	3.8	16		
Wyoming.	0.20	1	22			26.0	8	6.0	20		
Goderich.	0.50	1	13			20.5	18	3.0	13		
Georgetown.	0.85	2	8	0.79	21	26.6	22	6.3	13		
Unbride.	0.16	1	18	0.16	22	24.5	12	7.0	13		
Port Burwell.	1.18	3	17	0.92	23	33.5	12	8.0	27		
Montague.			24			24.0	7	13.0	13		
Sydenham.			23			38.0	8	10.0	21		
Sunshine.			16			24.5	15	3.0	17		
Deer Park.	0.95	2	15	0.87	22	16.6	15	6.3	14		
NEW BRUNSWICK—											
Point Escommac.	0.03	1	21	0.03	14	32.9	9	10.2	9-10		
NOVA SCOTIA—											
Port Morden.	1.18	3	20	0.41	14	35.0	9	15.0	3		

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE
SUN WAS ABOVE THE HORIZON IN THE MONTH OF JANUARY, 1904

	HOURS ENDING															
	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Victoria				0.00	0.03	0.06	0.13	0.16	0.14	0.17	0.19	0.04	0.00			
Nanaimo				0.00	0.02	0.05	0.11	0.17	0.17	0.17	0.17	0.05	0.00			
Agassiz				0.00	0.00	0.03	0.16	0.23	0.19	0.18	0.15	0.07	0.00			
Battleford				0.22	0.43	0.46	0.54	0.55	0.55	0.53	0.39	0.06	0.00			
Indian Head				0.09	0.02	0.28	0.35	0.42	0.50	0.46	0.46	0.14	0.00			
Brandon				0.00	0.03	0.40	0.54	0.62	0.59	0.51	0.43	0.20	0.00			
Winnipeg				0.06	0.30	0.49	0.53	0.48	0.52	0.50	0.17	0.01	0.00			
Woodstock				0.00	0.00	0.14	0.27	0.28	0.25	0.25	0.21	0.13	0.00			
Toronto				0.00	0.12	0.28	0.32	0.41	0.45	0.43	0.41	0.30	0.29			
Lindsay				0.01	0.15	0.25	0.30	0.33	0.38	0.42	0.33	0.50	0.15			
Barrie																
Gravenhurst				0.12	0.15	0.30	0.35	0.36	0.34	0.31	0.28	0.13	0.00			
Kingston				0.03	0.17	0.25	0.30	0.36	0.38	0.35	0.35	0.20	0.00			
Ottawa				0.00	0.07	0.22	0.28	0.32	0.43	0.41	0.32	0.07	0.00			
Montreal				0.00	0.01	0.07	0.17	0.27	0.30	0.32	0.21	0.02	0.00			
Quebec				0.00	0.03	0.16	0.28	0.33	0.36	0.38	0.39	0.14	0.00			
Fredericton				0.15	0.27	0.37	0.48	0.47	0.35	0.29	0.14	0.00	0.00			

	Victoria	Nanaimo	Agassiz	Battleford	Indian Head	Brandon	Winnipeg	Woodstock	Toronto	Lindsay	Barrie	Gravenhurst	Kingston	Ottawa	Montreal	Quebec	Fredericton
Mean proportion for month (Constant sunshine being 1.)	0.10	0.11	0.11	0.44	0.31	0.39	0.35	0.16	0.30	0.29	...	0.25	0.26	0.23	0.18	0.23	0.27
Difference from average	0.10	—	0.08	0.10	0.02	0.01	0.09	0.05	0.03	0.03	...	0.01	0.07	0.16	...	0.13	...
Maximum daily amount	0.64	0.75	0.65	0.91	0.70	0.78	0.78	0.71	0.83	0.95	...	0.92	0.89	0.75	0.88	0.77	0.81
Date	14	14	27	27	7	31	31	18	25	21	...	18	27	27	25	5	19
No. of days completely clouded	18	23	23	5	9	6	6	22	12	16	...	13	15	17	16	12	12

Thunder recorded on:—

14. Bermuda.

22. Lindsay, Toronto, Montague, Uxbridge, Westport, Parma, Scarboro, Ennismore, Ursa, Smith's Falls.

Aurora recorded:—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

9. Hillsdown, IV; Onion Lake, II; Beaver Hills, W., Threehills Creek, III.

10. Moose Jaw, Hillsdown, IV; Onion Lake, II; Estevan, IV; Chicoutimi, Beaver Hills, W., Prince Albert, I; Edmonton, III; Threehills Creek, III.

11. Onion Lake, III; Estevan, IV; Minnedosa, IV; Prince Albert, I; Edmonton, II; Battleford, III.

12. Edmonton, IV; Battleford, IV.

15. Estevan, IV; Aweme, II; Sherbrooke, IV; Chicoutimi, Father Point, IV.

16. Minnedosa, IV.

20. Lindsay, IV; Savanne, Beaver Hills, W., III; Threehills Creek, IV.

21. Truro, IV; Pictou, III; Sherbrooke, IV.

22. Estevan, IV.

23. Battleford, IV.

25. Prince Albert, II.

28. Minnedosa, IV.

FORECASTS FOR JANUARY, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1074. These were divided as follows:—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Percentage
Manitoba	95	75	14	6	86.3
Lake Superior	95	79	14	2	90.5
Lower Lake Region	115	100	10	5	91.3
Georgian Bay	112	90	17	5	87.9
Ottawa Valley	103	80	20	3	87.3
Upper St. Lawrence	103	84	17	2	89.8
Lower St. Lawrence	100	85	12	3	91.0
Gulf	99	82	13	4	89.4
Maritime Provinces, West	126	91	21	14	80.5
Maritime Provinces, East	126	100	15	11	85.8
Total	1074	866	153	55	87.7

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,

Meteorological Office, Toronto,

Director

27th February, 1904

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

FEBRUARY, 1904.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather over the lower mainland and islands of British Columbia was exceedingly dull and wet from the 3rd to 7th, 10th to 16th, and 19th to 28th, the intervening periods being comparatively fine and dry. It was unusually cold throughout the greater portion of the month, the lowest temperatures occurring generally between the 6th and 10th. Many cultivated flowers were in bloom in sheltered places on the 29th. Over the upper mainland the weather was also unusually dull and cold, more especially from the 6th to 10th, when temperatures well below zero were recorded at many places. The precipitation which was mostly snow varied somewhat with the district, but in most localities it was excessive.

In the North-west Territories the weather was exceedingly cold and in most localities there was much snow, nevertheless there were many fine days and bright sunshine generally exceeded the average. In northern districts temperatures well below zero occurred every night and frequently during the day at most stations, whilst in southern districts, and more especially in Alberta, they were much less frequent. Temperatures above the freezing point were recorded in Alberta on or about the 1st, 17th to 20th, and 27th to 29th. In Northern Alberta, Saskatchewan and Eastern Assinaboia the depth of snow on the 29th generally exceeded 20 inches, and the thickness of ice on rivers and lakes on the same date throughout the Territories was about 30 inches.

In Manitoba as in the Territories exceedingly cold weather prevailed throughout the greater portion of the month, the temperature at most places being below zero every night and not generally rising above on more than fourteen days. On the last two days temperatures above the freezing point occurred at many stations. Much snow fell and on the 29th the depth was generally about 24 inches in the western portion of the Province and six inches in eastern districts. On the same date the ice at Minnedosa was 24 inches in thickness.

In Ontario the weather was phenomenally cold, its intensity exceeding that of February in nearly every year since 1830. With the exception of short periods about the 7th, 11th, 20th to 23rd, and 27th to 29th, when in southern districts the temperature rose above the freezing point, it was continuously cold. The precipitation which was chiefly snow, though varying somewhat with the district, did not depart much from the average. Heavy rain occurred on or about the 8th and 22nd in more southern localities and much snow fell during the first week, also on several days between the 15th and 25th. Frequent high winds caused much drifting. The depth of snow on the 29th ranged between 30 and 60 inches, the northern portion of the Peninsula of Ontario being the most deeply covered. The thickness of ice on rivers and lakes varied between 16 and 36 inches.

The weather in the Province of Quebec was excessively cold and in most districts the precipitation was comparatively light. Temperatures above or near the freezing point were recorded on or about the 1st, 21st to 23rd and 28th, but with these exceptions there were few breaks in the intense cold. Heavy falls of snow occurred about the 5th, 8th, 15th and on several dates after the 21st. Owing to the high winds and much drifting the depth on the 29th varied considerably, but generally exceeded 15 inches, it being 48 inches at Quebec and 56 inches at Rimouski.

In New Brunswick as in more western provinces the weather was unusually cold. From the 2nd to 20th temperatures below zero occurred almost nightly, but on the 21st there was a marked rise and for two or three days it was comparatively mild. On the 24th it again turned cold and, although the day temperatures were high on the 28th and 29th, the nights were intensely cold to the end of the month. Much snow occurred during the month and although drifted by high winds the depth on the 29th generally exceeded 36 inches and at Sussex was 48 inches in depth in the woods.

The weather in Nova Scotia was exceedingly cold and in southern districts there was much snow. From the 2nd to 8th snow or rain occurred frequently after which it was comparatively fine up to the 15th when it

again became unsettled and continued so to the 26th. Somewhat finer weather then prevailed to the end of the month. Rain was recorded on or about the 2nd, 8th and 23rd. The thickness of ice on the 29th was 12 inches at Yarmouth and 24 inches at Sydney.

In Prince Edward Island the sequence of the weather was much the same as in New Brunswick, exceedingly low temperatures being general, excepting on or about the 1st, 22nd and 29th when it was comparatively mild. The precipitation was lighter than usual and the depth of snow on the 29th at Charlottetown was 15 inches.—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The differences from normal atmospheric pressure in February were very pronounced —0.30 inch being the departure near the Pacific Coast Region and +0.20 over Lake Superior, thus making the range 0.50 of an inch. The departure was positive over the larger portion of the Dominion, British Columbia and Cape Breton alone showing negative departures.

HIGH AREAS.

During February areas of high pressure were as a rule very pronounced, some extremely high barometric readings being recorded. Very low temperatures were the frequent accompaniment of these systems.

Ten areas were chartered; five being first observed over the Northwest Territories, three over Washington Territory and British Columbia, and two over the Southwest States. The majority of the areas crossed the Lake Region and passed out to sea, north of the 40th parallel of latitude.

No. 4 marked the commencement of the pronounced Northwest type and was first observed on the 6th over the Northwest Territories, whence it passed to Manitoba where it hovered until the 10th with the barometer reduced to sea level reading over 30.70 inches. It then traversed the Lake Region and the St. Lawrence passing over the Gulf on the 13th. This area was accompanied by extremely cold weather.

No. 5 was an energetic area which moved into the Territories during the 12th hovering there until the 14th, when at Edmonton the barometer reduced to sea level was 31.04 inches. From the Territories the area passed southeastward with gradually decreasing energy, reaching the Atlantic on the 19th. Temperatures much below zero also attended this area throughout its course except in the Maritime Provinces.

LOW AREAS.

The persistent movement of areas of low pressure from the British Columbian and North Pacific States coasts southeastward to the Western States, thence over the Lake Region and down the St. Lawrence Valley was remarkable. Of the fifteen areas of depression charted during the month no less than thirteen entered the continent from the North Pacific Ocean. Many were most energetic, causing gales, and stormy conditions generally from coast to coast. Gales were unusually frequent on the British Columbian Coast and the wind mileage was likewise excessive from the Lake Region to the Maritime Provinces. Three of the most pronounced areas were as follows: No. 5 which travelled south-eastward from the British Columbian Coast reached the Lake Region between the 12th and 14th whence it passed to the New England Coast, and with increasing energy swept over the Maritime Provinces, causing a storm of much severity throughout Eastern Canada. No. 9 which passed over the Lake Region and down the St. Lawrence Valley between the 21st and 22nd brought a heavy rain storm and gale over the Maritime Provinces; and No. 14th which drifted south-eastward from the North Pacific States to Indian Territory, thence recurved north-eastward and passed over the Great Lakes giving the heaviest snow storm of the month in Ontario and east to Western Quebec, attended by a gale, the storm assuming blizzard features.

WINDS.

In Vancouver Island and over the mainland of British Columbia, the direction was largely easterly and the wind mileage was excessive, there being as many as eighteen days on which strong breezes were recorded, frequently attaining to the force of a gale.

In the North west Territories the direction was fairly equally distributed round the compass with nine days of fresh, fourteen of strong breezes and four gales.

In Manitoba the direction was also variable. There were eleven days with fresh and four with strong breezes, also eight days when gale force was experienced.

In the Lake Region the northerly to westerly directions predominated, with six days with fresh and thirteen of strong breezes, besides seven gales.

In the Ottawa and Upper St. Lawrence Valleys the direction was chiefly northerly to westerly with four days of fresh and twenty-one days of strong winds, including eight days on which the force of a gale was reached.

In the Lower St. Lawrence Valley and the Gulf the direction was mainly northerly to westerly with five days of fresh and eighteen of strong breezes, including nine days on which the winds attained to a gale.

In the Maritime Provinces the northerly to westerly directions were also most prevalent with five days of

fresh and ten of strong breezes and five gales. The gales occurred on the 2nd, 8th, 15th, 22nd and 28th, the heaviest being those of the 2nd, 15th and 22nd. At ports where winter navigation is pursued the gales were all warned except the moderate storm experienced on the 28th.

TEMPERATURE.

The mean temperature of February was decidedly below average throughout the Dominion, and to the greatest extent in Alberta where the negative departure amounted to 17°. At Calgary the mean temperature was -2°, the lowest monthly mean on record, excepting February, 1887, and January, 1890. Edmonton reported a mean of -8°, and the only months with a lower mean temperature were January, 1886, with -11°, and February, 1887, with -10°. Further east in the Territories, and in Manitoba, lower means have been recorded in several years. Dawson City reported mean temperature of -26°, about 6° below average, and depth of snow on the ground 30 inches.

Eastward from Alberta the negative departures became less pronounced, and were but 5 or 6 degrees in Manitoba. In Ontario, east of Lake Huron and the Georgian Bay, the departure from average ranged between 9 and 12 degrees. In the Province of Quebec and the Maritime Provinces the negative departure ranged between 6 and 10 degrees, except in the Gaspé Peninsula where it was somewhat less.

The Highest and Lowest temperatures in each Province during February, 1904, were :

British Columbia,	53°·9 on 19th at Cape Scott.	-30°·0 on 9th at Quesnelle.
North-west Territories,	48°·9 on 1st at Lethbridge.	-17°·0 on 14th at Duck Lake
Manitoba,	39°·0 on 28th at Emerson.	-43°·0 on 9th at Brandon.
Ontario,	51°·0 on 28th at Guelph.	-17°·5 on 8th at White River.
Quebec,	43°·6 on 22nd at Brome.	-41°·0 on 6th at Chicoutimi.
New Brunswick,	49°·8 on 22nd at Fredericton.	-39°·0 on 6th at Chatham.
Nova Scotia,	48°·0 on 24th at Wolfville.	-27°·2 on 26th at Parrsboro
Prince Edward Island,	41°·4 on 22nd at Charlottetown.	-18°·0 on 28th at Charlottetown.

BRIGHT SUNSHINE.

Bright sunshine was average or a little above in the North-west Territories and Ontario, elsewhere in Canada the average amount was not maintained. The percentage of the possible duration ranged from 50 at Battleford and 45 at Toronto to 13 at Victoria and 8 at Agassiz. Toronto recorded the greatest positive departure from average and Montreal the largest negative departure.

PRECIPITATION.

The precipitation was very generally above the average, the only large district showing a deficiency being New Ontario, where there was no rain and the snowfall was light. British Columbia stations show an excess, with a much larger snowfall than usual, and in the North-west Territories and Manitoba it was wholly in the form of snow, which was heavier and more frequent than usual in nearly all districts except Southern Alberta and Eastern Manitoba. In Ontario the snowfall was not excessive, and there were several rainy days. The heaviest snowfall occurred on the last day of the month, when from 10 to 15 inches fell in most districts, but near Lake Erie there was heavy rain and sleet. In Quebec and the Maritime Provinces the precipitation was nearly average; in the former Province and Northern New Brunswick it fell as snow except on one day, and in the Maritime Provinces it was partly rain and partly snow, the latter predominating.

DEPTH OF SNOW AND THICKNESS OF ICE.

At the close of the month the whole Dominion, exclusive of small districts in British Columbia and Southern Alberta was snow covered, and all observers in the Pacific Province report a very unusual amount on the Mountains. In Northern Alberta, Saskatchewan and Eastern Assiniboia the depth was nearly two feet, while in Manitoba, the depth which was nearly two feet in the western portion diminished to about six inches in the eastern portion. Near Lake Superior the depth was not excessive, much less than last year. On the higher lands of Ontario east of Lake Huron, the depth ranged from about 30 to 60 inches, and locally to more, while in the more southern parts of the Province, near Lake Erie and Ontario, it was from five to fifteen inches. In Muskoka and Nipissing Districts and thence to the Ottawa Valley, the general depth was from 30 to 40 inches, but some localities reported as much as 50 inches on the level. In Quebec, also, the depth was very great, being 48 inches at Quebec City, and 56 at Rimouski. The Maritime Provinces were also deeply covered, from 20 to 36 inches being reported, except at some points near the Bay of Fundy and in Western Nova Scotia. Thickness of ice reported as follows :—

NORTH-WEST TERRITORIES AND MANITOBA.—Edmonton, 30 inches; Medicine Hat, 30 inches; Swift Current, 38 inches; Battleford, 30 inches; Minnedosa, 24 inches.

ONTARIO.—Port Arthur, 30 inches; White River, 22 inches; Saugeen, 25 inches; Port Stanley, 30 inches; Toronto, 24 inches; Kingston, 16 inches; Bissett, 24 inches; Hamilton, 28 inches; Stony Creek, 30 inches; Brantford, 27 inches; Paris, 33 inches; Port Hope, 30 inches; Welland, 29 inches; Georgetown, 28 inches; Peterboro', 36 inches; Collingwood, 26 inches.

MARITIME PROVINCES.—Chatham, 24 inches; Charlottetown, 15 inches; Yarmouth, 12 inches; Sydney, 24 inches.

N. W. TERRITORIES. <i>Cont.</i>																																	
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
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30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	0
30	37	104	35	1885	11	13	7	20	25	6	10	18	6	7	20	8	57	2	25	1	93	0	70	6	23	0	0	0	6	21	0	0	

North Gower.	15	32	73	43	8	5	35	45	28	45	2	19	2	2	4	12	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
FEBRUARY, 1904.

STATIONS.	RAIN FALL.					SNOWFALL.					REMARKS.
	Amount in inches.	No. of Days of or Over.	No. of Fair Days.	Heaviest Fall in Month	Date.	Amount in inches.	No. of Days.	Heaviest Fall in Month	Date.		
<hr/>											
BRITISH COLUMBIA—	in.			in.		in.		in.			
Royal Oak.	5.71	20	8	1.00	11	7.0	3	4.5	6		
Goldstream Lake.	8.05	20	4	1.15	22	37.5	13	6.0	29		
Coquitlam.	9.10	20	7	1.96	4	13.0	5	8.0	7		Wind storms, 11th, 27th.
Kuper Island.	5.30	21	4	1.02	4	25.6	9	11.6	12		10th, robins arrived.
Sooke Lake.	2.46	11	8	0.58	22	86.0	20	18.0	28		
Nanaimo.	8.51	15	11	1.62	4	21.0	6	8.0	9		
Nass Harbour.	0.73	2	26	0.53	1	2.0	1	2.0	17		
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N. W. TERRITORIES—											
Innisfail.			21			6.8	8	2.5	5		15th, blizzard.
Lacombe.			23			11.5	6	2.0	2		16th, blizzard. [day.
Whitehead.			21			15.6	8	6.0	6		16th, terrific blizzard all
Coutts.			27			16.0	2	10.0	24		10th and 15th, blizzard.
Saltonst.			28			4.0	1	4.0	5		
Bruderheim.			23			17.0	6	6.0	5		9th, coldest day this winter.
Victoria.			25			3.5	4	2.0	12		
Beaver Hills, W.			19			13.7	10	4.5	4-5		14th, —45°.
Regina.			21			21.0	8	6.0	11		14th, intense cold; blizzard.
Beaver Hills, E.			24			11.5	5	4.0	8		29th, severe blizzard.
Dirt Hills.			23			14.0	6	4.0	5		16th, blizzard all day.
Stirling.			25			7.0	4	4.0	1		
<hr/>											
MANITOBA—											
Norquay.	R		20			9.5	8	5.0	6		13th, blizzard
Rapid City.			22			12.0	4	5.0	16		
Belmont.	0.01	1	23				6				
Gretna.			20			12.3	9	5.0	1		
Deloraine.			22			10.7	7	3.2	5		Blizzard, 1st, 4th, 16th, 26th.
Cartwright.			24			13.3	5	9.0	1		Blizzard, 1st.
Morden.			18			4.7	11	2.0	1		
Oakdale Park.			28			12.0	1	12.0	5		Blizzard 1st, 5th, 13th, 16th, 20th, 26th.
<hr/>											
ONTARIO—											
Arden.	0.96	2	19	0.72	22	19.0	8	4.0	3		9th to 12th, bitter cold.
Wyoming.	0.85	2	26	0.55	29	2.0	1	2.0	15		
Georgetown.	1.34	5	11	0.51	5	19.6	15	8.8	29		Fog 6-7th; thunder 28-29th.
Oliver's Ferry.	0.15	2	22	0.15	21-22	9.0	5	3.0	6		
Midland.	R		21	R		12.0	5	6.0	29		[thunder.
Westport.			14			25.2	15	5.0	14		19th, thunderstorm; 28th,
Dealtown.	2.27	6	14	1.54	29	3.3	4	1.3	23		28-29th, thunder and light-
Smith's Falls.	0.54	2	21	0.29	21	17.5	6	5.0	15		ning.
Niagara Falls.	1.79	4	23	0.73	7	6.0	3	3.0	29		
Orangeville.	1.07	5	15	0.31	7	16.6	9	6.3	3		29th, howling blizzard all
Ensdale.	R		20	R		14.8	9	4.5	22		day.
Port Burwell.	2.63	6	18	1.10	29	11.0	5	3.5	23		
Parma.	1.58	3	22	0.60	22	22.0	4	8.0	3		
Croydon.	1.75	2	24	1.30	22	10.0	3	6.0	14		28th, thunder storm.
Sydenham.	1.70	2	22	1.30	21	13.0	5	3.0	2		Blizzard 3-23rd; thunder,
Montague.	0.50	2	22	0.50	21-22	7.0	5	2.0	14		4th, —30°. [28th.
Westminster.	3.78	6	20	1.43	7	3.0	3	3.0	13		28th, thunder-storm.
Dutton.	2.53	4	20	1.03	21	5.0	5	2.0	23		7th, thunder-storm.
Huntsville.	0.20	1	21	0.20	22	18.0	7	4.5	14		
Goderich.	1.00	3	18	0.50	7	21.0	8	5.0	2		
Aurora.	0.55	2	19	0.37	7	19.9	8	8.3	29		
Jermyn.	0.30	1	26	0.30	21	10.0	3	6.0	24		
Scarboro.	0.71	2	17	0.60	7	17.8	10	10.0	29		
Ennismore.	R		22	R		15.0	4	5.0	29		
Sunshine.	0.27	5	15	0.26	28	8.7	10	2.0	29		
Deer Park.	1.02	3	18	0.41	6	14.0	9	7.5	29		
Ursa.	1.37	3	21	1.00	6	22.0	6	6.0	14		
Watford.	1.82	3	—	0.75	29	No record					[snow.
Providence Bay.	0.20	1	16	0.20	29	34.5	11	9.0	21		27th, first thaw since 1st;
Warton.	0.28	3	15	0.11	6	26.5	12	4.5	22		28th, thunder storm.
Exbridge.	0.70	4	18	0.37	7	17.5	7	8.5	29		28-29th, thunder and light
<hr/>											
NEW BRUNSWICK—											
Point Esquimaux.	0.18	1	22	0.18	22	22.0	6	11.2	13		Very rough month.
<hr/>											
NOVA SCOTIA											
Port Morden.	0.94	2	21	0.94	22-23	17.0	6	7.0	7		

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE
SUN WAS ABOVE THE HORIZON IN THE MONTH OF FEBRUARY, 1904

Hours Ending

	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Victoria				0.07	0.11	0.22	0.24	0.22	0.16	0.11	0.13	0.11	0.06			
Nanaimo				0.05	0.11	0.14	0.20	0.16	0.16	0.18	0.25	0.17	0.02			
Agassiz				0.00	0.04	0.06	0.17	0.15	0.13	0.09	0.10	0.04	0.00			
Battleford			0.13	0.17	0.51	0.55	0.56	0.59	0.66	0.65	0.59	0.36	0.01			
Indian Head				0.01	0.21	0.41	0.56	0.62	0.59	0.61	0.65	0.43	0.05			
Brandon				0.00	0.23	0.51	0.63	0.64	0.64	0.62	0.60	0.50	0.11			
Winnipeg				0.07	0.37	0.50	0.61	0.67	0.63	0.62	0.58	0.35	0.06			
Woodstock				0.02	0.20	0.39	0.46	0.44	0.39	0.37	0.36	0.27	0.14			
Toronto				0.02	0.32	0.46	0.59	0.60	0.58	0.54	0.52	0.46	0.39	0.05		
Lindsay				0.05	0.20	0.34	0.50	0.49	0.49	0.44	0.36	0.35	0.21	0.02		
Gravenhurst				0.07	0.40	0.52	0.52	0.54	0.54	0.51	0.42	0.40	0.33	0.04		
Barrie																
Kingston				0.18	0.41	0.49	0.50	0.60	0.61	0.59	0.50	0.37	0.09			
Ottawa				0.02	0.13	0.22	0.42	0.51	0.54	0.59	0.48	0.39	0.07			
Montreal				0.03	0.24	0.35	0.46	0.50	0.49	0.42	0.32	0.15	0.03			
Quebec				0.06	0.28	0.41	0.44	0.51	0.50	0.47	0.50	0.39	0.10			
Fredericton				0.10	0.26	0.43	0.45	0.45	0.52	0.49	0.44	0.37	0.16			
Mean proportion for month (Constant sunshine being 1.)	0.13	0.14	0.08	0.50	0.41	0.44	0.45	0.30	0.45	0.35	0.43	0.43	0.33	0.25	0.36	0.37
Difference from average	0.10	—	0.13	0.05	0.07	0.01	0.02	0.00	0.09	0.00	—	0.07	0.01	0.16	—	0.05
Maximum daily amount	0.76	0.83	0.74	0.93	0.75	0.80	0.82	0.83	0.89	0.90	0.89	0.86	0.80	0.87	0.86	0.87
Date	24	1	8	14	15	24	24	25	25	25	25	20	26	26	20	26
No. of days completely clouded	10	15	18	3	5	4	6	14	8	9	6	8	10	11	8	11

Thunder recorded on :—

5. Point Rich.
7. Westminster, Dutton, Port Stanley.
9. Bermuda.
19. Westport.
21. Scarboro', Nanaimo, Bamfield.
28. Arden, Georgetown, Dealtown, Woodstock, Croydon, Sydenham, Westminster, Ennismore, Dear Park, Warton, Uxbridge, Brantford, Port Hope, Meaford, Agincourt, Hamilton, Beatrice, Owen Sound, Paris, Port Dover, Collingwood, Sutton, Galt, Belleville, Clinton, Bala, Listowel, Alton, Lakefield, Stratford, Peterboro', Lucknow, Welland, Stony Creek, Westport, Guelph, Gravenhurst, London, Port Stanley, Kingston, Toronto.
29. Georgetown, Dealtown, Woodstock, Port Hope, Hamilton, Port Dover, Clinton, Alton, Windsor, Welland, Stony Creek, Guelph, Toronto.

Aurora recorded :—

Where the class of aurora is noted by the observer, it is given, (*I*) being the brightest, (*IV*) the feeblest in brilliancy.

4. Haileybury, IV ; Truro, IV.
5. Haileybury, III ; Grand Manan, IV ; Father Point, III ; Quebec, III ; White River, III ; Truro, IV.
6. White River, IV.
8. Threehills Creek, IV.
9. Cape Magdeleine, Edmonton, IV.
11. Quebec, IV.
13. St. Albans, IV.
14. Foxleigh, Hillview, III ; St. Albans, III ; Bowsman, IV ; Savanne, Bruce Mines, Cape Chatte, Threehills Creek, III ; Onion Lake, I ; Pakan, Alta, *bright*, Beaver Hills W., II ; Port Simpson, II ; Barnardo, Pictou, IV.
15. St. Albans, IV ; Bowsman, IV ; Savanne, Battleford, IV ; Edmonton, III ; Onion Lake, I.
16. Savanne, Beaver Hills W., IV ; Haileybury, IV ; Prince Albert, III ; Minnedosa, III ; Threehills Creek, IV.
17. Prince Albert, III.
18. Bowsman, IV.
19. Bowsman, IV.
21. Prince Albert, III.

FORECASTS FOR FEBRUARY, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1056. These were divided as follows:

DISTRICT.	No. Issued.	VERIFIED.			Percentage
		No. Fully	No. Partly	No. Not	
Manitoba.....	83	63	15	5	84.9
Lake Superior.....	90	76	10	4	90.0
Lower Lake Region.....	111	88	18	5	87.4
Georgian Bay.....	111	78	20	13	79.3
Ottawa Valley.....	101	78	15	8	84.6
Upper St. Lawrence.....	101	80	15	6	86.6
Lower St. Lawrence.....	114	86	17	11	82.9
Gulf.....	113	87	16	10	84.1
Maritime Provinces, West.....	116	82	28	6	82.7
Maritime Provinces, East.....	116	82	27	7	82.3
Total.....	1056	800	181	75	84.3

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director

Meteorological Office, Toronto,
26th March, 1904.

MONTHLY and Annual Summaries for the Year 1903, Moose Factory, Ontario—Latitude, N. 51° 16';
Longitude, W. 80° 56'. Height above Sea, 30·5 feet.

MONTH.	PRESSURE at 32°.			TEMPERATURE.										RELATIVE HUMIDITY.				PRESSURE OF VAPOUR.				CLOUD-NESS.				PRECIPITATION.	
	Monthly Mean.	Extremes.		Mean.							Extremes.		9 a.m. 3 p.m. 7 p.m. Mean.				9 a.m. 3 p.m. 7 p.m. Mean.				9 a.m. 3 p.m. 7 p.m. Mean.	Total.	Maximum in any 24 hours.				
		Max.	Min.	9 a.m.	10 a.m.	11 a.m.	Max.	Min.	Monthly	Max.	Min.	9 a.m.	3 p.m.	7 p.m.	Mean.	9 a.m.	3 p.m.	7 p.m.	Mean.								
	in.	in.	in.												in.	in.	in.	in.				in.	in.				
January	29·810	30·36	29·13	4·7	2·3	2·0	8·6	9·8	0·6	34·0	-39·0											67·61	46·58	0·40·0·30			
February	29·940	30·53	29·43	1·0	10·2	3·2	16·1	9·5	3·3	42·0	-44·0											61·60	11·46	" "			
March	30·134	30·60	29·56	12·9	21·8	17·4	27·7	1·7	14·7	45·0	-36·0											60·65	53·59	1·40·0·50			
April	30·017	30·44	29·36	23·3	27·2	23·7	33·0	12·1	22·5	47·0	-21·0											65·65	67·66	1·32·0·49			
May	30·071	31·54	29·59	39·5	44·2	38·8	52·3	29·9	41·1	71·0	7·0											73·68	68·70	3·05·1·03			
June	29·928	30·52	29·46	55·3	58·9	53·2	65·4	43·2	54·3	89·0	31·0											71·72	75·73	2·42·0·85			
July	29·813	30·17	29·32	60·8	66·9	61·9	71·5	49·5	60·5	93·0	37·0											64·68	64·65	1·54·0·34			
August	29·909	30·49	28·94	55·4	60·8	55·6	66·6	44·6	55·6	82·0	35·0											64·72	61·66	2·46·0·56			
September	29·865	30·33	29·33	8·8	53·9	49·0	60·6	41·9	51·2	80·0	27·0											67·69	70·69	5·01·0·93			
October	29·855	31·39	29·14	38·0	43·8	37·7	50·0	32·3	41·1	71·0	15·0											65·65	50·60	2·84·0·98			
November	29·887	30·42	29·14	20·3	25·6	22·1	31·1	17·1	24·1	57·0	-8·0											86·78	66·77	1·25·0·60			
December	29·849	30·33	29·38	1·9	2·7	1·7	7·8	11·1	1·7	27·0	-38·0											63·64	39·56	0·60·0·60			
Year	29·923	30·60	28·94	28·6	34·9	29·9	40·9	20·2	30·5	93·0	41·0											67·67	56·63	22·29·1·03			

MONTH.	NUMBER OF WINDS FROM											Average Hourly Force.	Maximum Force.	Direction at time of Maximum Force.	No. of Gales.	NUMBER OF DAYS										
										Clear.	Partly Cloudy.					Cloudy.	Precipitation 40 in. or over.	Snow.	Hail.	Fair.	Fog.	Thunder Storms.	Lightning Alone.	Aurora.		
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.																	
January	1	2	1	1	3	25	22	27	11	11	V	N.W.	2	10	8	13	2	11	0	20	0	0	0	0	0	
February	16	5	1	0	5	24	13	4	16	11	VI	N.	3	10	14	4	0	4	0	24	0	0	0	0	0	
March	16	14	0	1	10	18	11	3	20	11	V	S.	1	12	4	15	7	11	0	19	0	0	0	0	0	
April	33	21	6	0	2	6	0	6	16	11	IV	N.	0	7	7	16	6	9	0	20	0	0	0	0	0	
May	19	39	0	0	9	11	4	3	8	11	V	N.	1	5	8	18	8	1	0	22	3	0	1	0	0	
June	16	38	3	4	1	9	2	4	13	11	IV	N.E.	0	6	4	20	13	0	0	14	0	3	0	0	0	
July	16	22	2	4	6	11	5	12	15	11	IV	N.E.	0	3	14	14	10	0	0	20	0	2	0	1	0	
August	15	33	3	2	7	6	9	6	12	11	V	N.W.	3	7	6	18	13	0	0	18	3	1	0	1	0	
September	12	13	1	3	14	12	17	6	12	11	VI	W.	6	5	8	17	19	0	0	10	0	0	0	2	0	
October	4	10	2	4	15	13	10	14	21	11	VI	S.W.	5	9	7	15	12	4	0	19	0	0	0	5	0	
November	9	4	1	6	8	13	17	18	17	11	V	N.W.	2	3	7	20	6	8	0	22	0	0	0	1	0	
December	8	3	1	0	10	38	12	15	8	11	IV	W.	0	9	11	11	1	8	0	23	0	0	0	0	0	
Year	165	199	21	25	90	186	122	118	169	11	VI	W.	23	86	98	181	97	56	0	231	6	6	1	10	0	

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review

VOL. XXVIII.

MARCH, 1904.

No. 3.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

Over the lower mainland and islands of British Columbia the weather was unusually cold and in most districts there was much rain. Throughout the greater portion of the month it was quite stormy and unsettled and there was little sunshine until the 21st. On or about the 26th, and from that date to the 31st, more Spring-like conditions prevailed but vegetation was exceedingly backward. Over the Upper mainland the weather was quite similar to that near the coast, low temperatures and much cloudiness and precipitation being general. During the last three or four days of the month somewhat milder weather prevailed, but growth in plant life was quite backward.

The weather in the North-west Territories was exceedingly cold, the precipitation was unusually heavy, and the proportion of bright sunshine was below the average. During the first week and last ten days comparatively fine weather prevailed. On or about the 27th there was a marked rise in the temperature and it continued mild to the 31st, much of the snow on the ground being melted and disappearing almost completely in western districts. The winds were mostly south-east to south-west and were quite strong, and the snow which fell was much drifted.

In Manitoba the weather conditions were very similar to conditions in the Territories: it was not however, quite so cold, but there was less sunshine. The precipitation recorded occurred mostly between the 8th and 21st, the weather preceding the former date and following the latter being mostly fair. High winds were frequent and the snow much drifted. From the 28th to 31st temperatures generally well above the freezing point prevailed and much of the snow upon the ground was melted. On the 24th a heavy snow storm occurred, the wind being of exceptional violence.

In Ontario the weather was comparatively mild during the first two or three days, much rain falling in most districts and thunderstorms occurring at many places. On the night of the 3rd there was a marked fall in the temperature, but on the 5th it again rose to or above the freezing point in southern districts. From the 9th to the 18th it was somewhat cold, after which, although the nights were cold, the day temperature was more moderate to the end of the month. On or about the 22nd the temperature exceeded 50° at many stations and rain with thunder occurred in some localities. Much cloudiness prevailed and in the southern and eastern portions of the province the precipitation was excessive. Comparatively few thaws, which usually form a crust upon the snow, having occurred during the past winter much drifting was reported, and high winds being again frequent during March railway traffic continued demoralized in northern districts. Few signs of approaching spring were visible until late in the month, well-known migratory birds not arriving until about the 23rd. In southern districts, rivers and streams opened about the 31st and, although the remains of drifts were still to be seen, the snow had practically disappeared.

In the Province of Quebec there was much fine bright weather throughout the month and although the nights were cold and the mean temperature was below the average it was frequently quite mild during the day, this being more general after the 11th. The precipitation, which was almost entirely snow, was somewhat heavy in most districts and was much drifted by frequent high winds. The depth of the snow on the ground near the city of Quebec was 40 inches on the 31st.

The weather in New Brunswick did not depart much from the normal, but in most districts it was somewhat colder than usual, and the amount of cloud and precipitation was excessive in most localities. The temperature though generally quite low at night frequently rose above the freezing point during the day, the average range being 20° at some stations. Temperatures well below zero occurred at many places on or about the 5th, 6th and 18th. The depth of snow in the woods near Fredericton was 24 inches on the 31st.

In Nova Scotia the weather was mostly fair, cold and dry, excepting locally on the Atlantic Coast where the precipitation was somewhat heavy. On or about the 19th, there was a marked rise in the temperature and after this date it remained comparatively mild. Although much of the snow had disappeared by the 31st it still lay to a considerable depth in the woods and there were few signs of approaching spring.

The weather in Prince Edward Island was unusually cold and low temperatures generally prevailed until the 19th when it became more moderate. On the 22nd, however, the temperature fell to zero and the nights continued quite cold to the last day of the month. Much bright sunshine occurred, but the precipitation which was chiefly rain exceeded the average at Charlottetown.—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure in March was above average over the greater part of Canada. In the region however, where the departure was below average, which included British Columbia, Southern Alberta and Assiniboia, the greatest difference occurred, —21 of an inch being reported from New Westminster, B. C. The line of no departure from average passed through Saskatchewan and Northern Alberta to Manitoba; east of this the departure gradually increased to between + 10 and + 14 over the Maritime Provinces. From the Maritime Provinces the differences from average decreased again, and no departure is reported from St. John's Newfoundland. The greatest positive departure + 14 occurred at Yarmouth, N. S.

HIGH AREAS.

Nine areas of high pressure were charted during the month, the larger number being of much intensity. Six first appeared in the North-west Territories and passed over the Dominion, the remaining three moved into the continent over the North Pacific States and traversed the central portions of the United States; two out of the three subsequently recurved north-eastward and passed over the Maritime Provinces. It will thus be seen that the general drift of high pressure areas was, from the north-westward, those from the westward being few and of little intensity and as very cold weather was the usual accompaniment of the systems a cold month was experienced in all portions of Canada.

LOW AREAS.

Sixteen areas of low pressure were charted during the month, the drift of depressions from the coasts of British Columbia and the North Pacific States south-eastward to the North-west and West States, thence into the Lake Region and over the north-eastern portion of the continent which has been such a striking characteristic of the general paths of the depressions for some successive months continuing with little interruption, except that as the month advanced two areas recurved north-eastward immediately after crossing the Mountain Ranges and passed into Manitoba. Both of these depressions brought snow and high winds in Manitoba and over the larger part of the Territories, the second one giving a storm of unusual violence, the winds attaining to almost hurricane force between the 24th and 25th with a very heavy snowfall, especially from the Qu'Appelle Valley to Winnipeg.

Such a large number of depressions passing over Canada and many at the same time being of much intensity, the general weather of the month was as a natural sequence very unsettled and stormy. The wind mileage was everywhere considerable and in many localities excessive. Precipitation was also nearly everywhere above the average amount and largely snow owing to the low temperature which usually prevailed.

WINDS.

In Vancouver Island and over the mainland of British Columbia, the east and south direction predominated with thirteen days of fresh and nine of strong breezes and two gales.

In the North west Territories the east and west direction were most in evidence with thirteen days of fresh and twelve of strong breezes and three gales.

In Manitoba the north-west to north-east directions seem to have been the most general with fourteen days of fresh and ten of strong breezes and four gales. The gale which was experienced between the 24th and 25th being of exceptional violence.

In the Lake Region the east and west directions were more general than others with seven days of fresh and ten of strong breezes and four gales.

In the Ottawa and Upper St. Lawrence Valleys the westerly direction predominated with eight days of fresh and fifteen of strong breezes and four gales.

In the Lower St. Lawrence Valley and the Gulf the westerly direction was also most prevalent with five days of fresh and fourteen of strong breezes and three gales.

In the Maritime Provinces the west and north directions were most in evidence with nine days of fresh and twelve of strong breezes and three gales.

The gales in the Maritime Provinces, where winter navigation is pursued, occurred on the 3rd and 8th, 25th, the gale on the 3rd being the most severe and that of the 25th both moderate and local. The first two gales were amply warned, but no signals were displayed for the gale of the 25th.

BRIGHT SUNSHINE.

Bright sunshine was less than the average in all portions of the Dominion. The percentage of possible duration ranged from 16 at Battleford and 40 at Fredericton to 28 at Toronto, Lindsay and Nanaimo and 21 at Agassiz.

TEMPERATURE.

The temperature was slightly above the average on the north shore of Lake Superior, also locally in the Muskoka and Nipissing Districts; average or a little below elsewhere in Ontario, and likewise in Quebec and the Maritime Provinces; below average in Manitoba, and very much below in the Territories and over the greater part of British Columbia. Edmonton recorded a negative departure of 11 degrees, Calgary of 10 degrees, and Swift Current of 8 degrees, and in British Columbia, Barkerville and Kamloops both gave a deficiency of 5 degrees.

The Highest and Lowest temperatures in each Province during March, 1907, were:

British Columbia,	62°·0 on 24th at Agassiz.	—35°·4 on 2nd at Stuarts Lake.
North-west Territories,	50°·0 on 31st at Edmonton.	—31°·5 on 2nd at P. Albert.
Manitoba,	55°·0 on 28th at Bowsman.	—32°·0 on 2nd at Bowsman.
Ontario,	65°·0 on 23rd at Point Clark.	—10°·0 on 4th at White River.
Quebec,	52°·0 on 25th at Abitibi.	—28°·7 on 25th at Chicoutimi.
New Brunswick,	60°·0 on 31st at Grand Manor.	—15°·0 on 5th at Dalhousie.
Nova Scotia,	62°·0 on 27th at Wolfville.	—9°·0 on 13th at Port Hastings.
Prince Edward Island,	47°·7 on 26th at Charlottetown.	—2°·2 on 6th at Charlottetown.

PRECIPITATION.

Yarmouth and Sydney in Nova Scotia both report the precipitation much below the average; otherwise in all parts of the Dominion, except in a few isolated localities, it was above the average. The positive departures in the Territories and Manitoba where the precipitation was almost entirely snow, was very pronounced; this was especially the case from the Qu'Appelle Valley to Winnipeg and no doubt was owing to the great snowstorm which prevailed over the district between the evening and night of the 24th. The positive departures were also marked in the Ottawa Valley and over a portion of the Lake Region, but the precipitation was rain as well as snow.

DEPTH OF SNOW AND THICKNESS OF ICE.

Snow was still deep on the ground at the close of the month in parts of Saskatchewan, Manitoba, the Qu'Appelle Valley, the Province of Quebec, as well as in portions of Ontario and the Maritime Provinces. It was, however, diminishing quickly and the bright weather which was experienced as April set in caused it to disappear with great rapidity. The greatest depth of snow recorded on the ground at the close of the month was Battleford, 30 inches; Qu'Appelle, 32 inches; Quebec, 40 inches; Muskoka and Nipissing Districts from 24 to 30 inches. In British Columbia much snow is reported in the mountains. At Barkerville in Cariboo the depth was 4 feet 8 inches.

Thickness of ice is reported as follows:—Battleford, Medicine Hat, Swift Current and Port Arthur, 30 inches; White River, 24 inches; Ottawa, 28 inches; Toronto, 24 inches; Port Dover, 36 inches; Gravenhurst, 24 inches; Chatham, N.B., 18 inches; Sydney, N.S., 24 inches; Charlottetown, P.E.I., 15 inches.

[illegible]

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, MARCH, 1904.

a barometer not reduced to sea level. * Stations not furnished with Registering Thermometers.

[illegible]

PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
MARCH, 1904.

STATIONS.	RAIN FALL.					SNOWFALL.					REMARKS.
	Amount	No. of	No. of	Heaviest	Date.	Amount	No. of	Heaviest	Date.		
	in inches.	Days or Over.	Days.	Fall in Month		in inches.	Days.	Fall in Month			
BRITISH COLUMBIA—											
Royal Oak, ..	4 58	14	14	0 90	4	2 3	3	1 5	22	Thunder on 22nd.	
Nanaimo, ..	5 98	15	15	1 21	18	4 0	1	4 0	1		
Kuper Island, ..	5 15	18	10	1 18	5	3 3	4	1 5	22		
Goldstream Lake, ..	8 68	18	7	1 97	4	33 0	11	8 0	23		
Sooke Lake, ..	10 24	19	8	2 18	5	24 0	7	14 0	23		
Nasas Harbour, ..	0 78	2	24	0 54	30	18 0	5	6 0	4		
Port Essington, ..	2 31	4	22	0 98	5	13 5	4	6 0	7		
Coputlam, ..	8 23	16	14	1 01	5	*	1	*	21		
N. W. TERRITORIES—											
Beaver Hills, E., ..			22			9 5	9	5 0	21		
Beaver Hills, W., ..			19			13 0	12	5 0	15		
Innisfail, ..			25			8 0	6	2 5	15		
Willow Bunch, ..			25			8 0	6	3 5	3		
Lacombe, ..			23			8 5	8	3 0	18		
Broderheim, ..			20			20 0	11	6 0	15		
Dirt Hills, ..			21			38 0	9	7 0	20		
Regina, ..			17			22 4	14	8 0	10		
Sterling, ..			23			18 0	8	6 0	8		
Victoria, ..			23			27 0	8	10 0	20		
Saltcoats, ..			24			14 0	7	6 0	9		
MANITOBA											
Rapid City, ..	R		11	R	6	44 0	20	10 0	9		
Norquay, ..			21			20 0	10	6 0	1		
Belmont, ..	0 45	1		0 45	30						
Gretina, ..	0 14	2	14	0 14	30	20 2	13	4 0	25		
Deloraine, ..	0 03	1	17	0 03	30	20 3	13	5 0	18		
Cartwright, ..			21			39 8	10	12 0	24		
Oakdale Park, ..			25			33 0	6	12 0	12		
ONTARIO											
Dutton, ..	3 15	7	21	0 77	25	10 0	3	6 0	17		
Jernyn, ..	1 01	3	26	0 50	26	5 0	2	3 0	15		
Midland, ..			27			7 0	4	3 0	14		
Emisdale, ..	1 75	6	15	0 48	22	9 0	6	3 3	7		
Montague, ..	1 62	4	25	0 50	7	4 0	2	3 0	1		
Elora, ..	2 93	10	15	0 68	6	21 0	8	5 0	19		
Wyoming, ..	0 80	4	24	0 20	22	8 0	3	3 0	14		
Croydon, ..	0 37	4	24	0 14	7	10 0	3	6 0	1		
Niagara Falls, ..	1 83	4	26	0 70	3	2 0	1	2 0	14		
Dealtown, ..	2 86	10	20	0 85	25	2 0	1	2 0	14		
Watford, ..	2 87	6	—	1 00	2						
Westminster, ..	2 55	5	20	1 03	25	5 0	4	3 0	14		
Scarboro, ..	2 31	6	14	0 62	3	7 8	10	4 0	17		
Oliver's Ferry, ..	0 90	4	24	0 30	7	6 0	3	3 0	1		
Sunshine, ..	1 68	6	20	0 51	3	7 5	5	3 0	4		
Aurora, ..	1 80	8	18	0 73	3	6 5	6	3 5	17		
Orangeville, ..	2 61	6	19	0 82	3	19 3	6	8 2	—		
Arden, ..	3 56	8	20	0 83	8	13 0	4	8 0	1		
Smith's Falls, ..	1 32	3	24	0 60	8	9 0	4	4 0	1		
Sydenham, ..	2 98	5	23	1 07	7	8 0	3	5 0	1		
Lansdowne, ..	0 96	4	25	0 50	7	5 0	2	3 0	18		
Uxbridge, ..	1 63	8	15	0 53	3	8 0	8	3 0	18		
Parma, ..	1 48	3	23	0 68	26	17 5	5	4 0	1		
Georgetown, ..	2 67	10	11	0 75	7	9 4	13	5 0	18		
Goderich, ..	2 80	7	19	0 70	25	16 0	6	5 0	17		
Port Burwell, ..	2 82	9	18	0 75	7	8 5	4	4 0	14		
Deer Park, ..	2 51	6	22	0 81	2	6 3	4	6 0	17		
Huntsville, ..	1 51	4	20	0 55	22	14 5	7	4 0	1		
Providence Bay, ..	1 97	8	15	0 75	21	19 2	10	6 0	10		
Warton, ..	1 64	8	19	0 30	6	6 5	5	2 5	19		
Westport, ..	1 65	4	21	0 65	7	15 6	6	4 0	19		
NEW BRUNSWICK—											
Point Escomiac, ..	0 23	3	24	0 10	25	12 4	4	4 1	8		
NOVA SCOTIA											
Port Morden, ..	1 27	4	23	0 86	9	17 0	7	7 5	29		

Aurora recorded.

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the faintest in brilliancy.

1. Beaver Hill W., IV.
3. Savanne, Bowsman, IV ; Estevan, IV ; Haileybury, IV.
4. Battleford, IV ; Swift Current, IV ; Rat Portage, IV ; Aweme, III ; Bowsman, IV ; Hillsdown, IV ; Huntsville, IV ; Gravenhurst, IV ; Haileybury, II ; Truro, IV.
5. Edmonton, IV ; Minnedosa, IV ; Aweme, IV ; Bowsman, IV ; Truro, IV.
6. Beaver Hills W., IV.
7. Battleford, IV.
14. Battleford, IV.
19. Foxleigh.
21. Truro, IV.
25. Hillsdown, IV.
26. Bowsman, IV.
30. Wetaskiwin.
31. Prince Albert, I ; Cape Magdalene.

Thunder recorded on:—

1. Lucknow, Port Hope, Agincourt, Port Burwell, Guelph.
2. Toronto, Point Clark, Hamilton, Birnam, Stony Creek, Alton, Clinton, Midland, Meaford, Port Dover, Wiarton, Deer Park, Georgetown, Uxbridge, Sunshine, Westminster, Guelph.
3. Port Stanley, Halifax, Yarmouth, Saugeen, Port Hastings, Windsor, Hamilton, P. E. I., Point le Preaux, Sussex, St. Stephen, Moncton, Paris, Peterboro', Lakelfield, Brantford, Sutton W., Arden, Orangeville, Scarboro, Truro, St. John, Galt.
4. Wolfville, Point Escuminac, Pictou, Charlottetown, Bermuda.
5. Quesnel.
6. Scarboro.
10. Cowichan, Thetis Island, Nanaimo.
12. Bermuda, Bamfield.
14. Port Dover.
15. New Westminster, Bermuda.
17. Brantford.
21. Point Clark, Bruce Mines, Providence Bay, Ursa, Midland.
22. Kingston, Saugeen, Toronto, Hamilton, Clinton, Meaford, Lucknow, Peterboro', Haliburton, Uplands, Brantford, Agincourt, Sutton W., Kinnmount, Brome, Thetis Island, Kuper Island, Wiarton, Georgetown, Smiths Falls, Arden, Orangeville, Aurora, Croydon, Emsdale, Jernyn, Lindsay, Gravenhurst, Galt.
23. Ottawa, Halifax.
24. Cockburn Island, Jernyn.
25. Kingston, Providence Bay, Emsdale.
26. Port Stanley.
29. Cowichan, Dealtown.
30. Dealtown.
31. Port Stanley, Hamilton, Birnam, Welland, Brantford.

Appearance of Spring Birds, &c.

ROBINS.—Port Stanley, 1st; Dutton, 1st; Welland, 2nd; Point Clark, 4th; Nelson, 4th; Brantford, 7th; Clinton, 10th; Tobacco Plains, 10th; Alberni, 11th; North Nicomen, 12; Birnam, 13th; Dealtown, 15th; Stony Creek, 16th; Collingwood, 17th; Owen Sound, 19th; Belleville, 20th; Meaford, 20th; Peterboro', 20th; Wiarton, 21st; Paris, 21st; Scarboro, 21st; Montague, 21st; Beatrice, 22nd; Alton, 22nd; Hamilton, 22nd; Arden, 23rd; Lindsay, 23rd; Agincourt, 24th; Bella Coola, 24th; Westport, 24th; Gravenhurst, 24th; Windsor, N.S., 25th; Bala, 25th; Lakelfield, 25th; Nanaimo, 25th; Grand Manan, 28th; Clontarf, 29th; Ursa, 31st; Deseronto, 22nd.

BLACKBIRD.—Brantford, 17th; Birnam, 17th; Montague, 21st; Stony Creek, 23rd; Clinton, 24th; Westport, 24th; Arden, 28th; St. Stephen, 28th; Lucknow, 30th; Deseronto, 25th.

JUNCO.—Lucknow, 27th ; Pictou, 27th ; St. Stephen, 30th.

GREY BIRD.—Paris, 21st ; Meaford, 22nd ; Scarboro', 23rd ; Alton, 24th ; Agincourt, 24th.

KILDEER PLOVER.—Birnam, 19th ; Meaford, 22nd ; Clinton, 23rd.

BLUE BIRD.—Princeton, 16th ; Brantford, 17th ; Belleville, 20th ; Meaford, 22nd ; Scarboro', 22nd ; Stony Creek, 23rd ; Alton, 24th ; Clinton, 25th.

CRANES.—Bala, 25th ; Arden, 25th.

YELLOW BIRD.—Welland, 15th.

MEADOW LARK.—Belleville, 11th ; Tobacco Plains, 16th ; Princeton, 20th ; Clinton, 24th ; Lucknow, 25th.

CHERRY BIRD.—Meaford, 5th.

PHOEBE.—Lakefield, 31st.

GEESE.—Pictou, 13th ; Wyoming, 22nd ; Collingwood, 25th ; Willow Bunch, 30th ; Deloraine, 31st.

DUCKS.—Deseronto, 24th.

SWALLOWS.—Deseronto, 25th.

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE
SUN WAS ABOVE THE HORIZON IN THE MONTH OF MARCH, 1904

	Hours Ending															
	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Victoria			0.03	0.15	0.23	0.33	0.49	0.45	0.53	0.53	0.43	0.35	0.26	0.04		
Nanaimo			0.04	0.12	0.20	0.20	0.30	0.35	0.37	0.38	0.47	0.41	0.36	0.10		
Agassiz			0.00	0.04	0.16	0.32	0.32	0.33	0.33	0.30	0.24	0.23	0.10	0.03		
Battleford	0.06	0.33	0.44	0.52	0.50	0.55	0.52	0.50	0.57	0.55	0.49	0.32	0.00			
Indian Head			0.00	0.07	0.23	0.45	0.62	0.54	0.55	0.47	0.39	0.30	0.04	0.00		
Brandon		8	0.13	0.33	0.49	0.52	0.55	0.54	0.56	0.51	0.45	0.27	0.05			
Winnipeg			0.01	0.18	0.32	0.46	0.42	0.50	0.51	0.52	0.60	0.49	0.32	0.00		
Woodstock			0.00	0.00	0.25	0.33	0.33	0.40	0.39	0.33	0.34	0.24	0.14	0.00		
Toronto			0.00	0.13	0.27	0.32	0.33	0.38	0.40	0.38	0.36	0.38	0.31	0.14		
Lindsay			0.01	0.11	0.28	0.34	0.37	0.38	0.40	0.34	0.37	0.25	0.21	0.20	0.02	
Gravenhurst			0.00	0.10	0.34	0.39	0.36	0.38	0.40	0.44	0.45	0.43	0.35	0.24	0.03	
Barrie																
Kingston			0.01	0.28	0.48	0.46	0.48	0.41	0.41	0.40	0.40	0.38	0.21	0.00		
Ottawa			0.02	0.28	0.45	0.51	0.52	0.42	0.41	0.48	0.44	0.40	0.23	0.01		
Montreal			0.02	0.17	0.41	0.51	0.51	0.52	0.55	0.49	0.40	0.30	0.11	0.00		
Quebec			0.07	0.20	0.41	0.45	0.49	0.51	0.54	0.50	0.49	0.49	0.43	0.06		
Fredericton			0.01	0.37	0.51	0.49	0.51	0.52	0.49	0.48	0.45	0.45	0.38	0.13		

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Barrie.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month (Constant sunshine being 1.)	0.31	0.28	0.21	0.46	0.31	0.37	0.36	0.24	0.28	0.28		0.33	0.33	0.35	0.39	0.39	
Difference from average.....	0.07	—	0.04	0.02	0.03	0.06	0.13	0.09	0.14	0.14		—	0.00	0.02	0.06		0.00
Maximum daily amount.....	0.85	0.99	0.70	0.92	0.70	0.81	0.80	0.76	0.87	0.92		0.91	0.80	0.85	0.87	0.87	0.88
Date.....	25	26	31	26	22	3	27	16	16	16		18	28	23	4	17	17
No. of days completely clouded..	7	7	15	8	7	8	8	11	9	10		9	5	7	9	10	7

SEISMIC DISTURBANCE, 21st MARCH, 1904

The seismic disturbance which occurred here on the morning of the 21st March was the most severe experienced in the memory of the present generation since the tremor of the 22nd October, 1869. The most accurate information fixes the time as 2:4 a.m.; the first shock was of about 10 seconds duration followed about 3 minutes later by a much lighter but decidedly noticeable tremor of about 4 seconds duration. Some claim that a very faint movement continued for at least 15 minutes. The disturbance was general throughout New Brunswick and in portions of the Bay of Fundy district. No serious damage occurred but houses were violently shaken, crockery rattled, and almost every family have stories to tell of beds rocking, windows rattling and other experiences; in a few places walls were cracked.

At St. Stephen chimney tops were toppled over and at St. Martins the foundation walls of a house were damaged, and crockery broken in several houses.

There was not a trace of the disturbance on the barograph or registering tide gauge. It was thought that the shake might have caused some variation to the time of the two astronomical clocks, the pendulum of the Sideral clock swings north and south and that of the M. T. clock east and west, but observations of Alpha Cygni on morning of disturbance did not indicate the least variation to the pendulum of either clock. Some state that the shocks came with a roar and rumbling noise, but it is probable that this was due to the high north-west wind which prevailed at the time. The night was clear and at time of disturbance wind was north-west 27 miles an hour.—D. L. HUTCHINSON, St. John Observatory.

FORECASTS FOR MARCH, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1046. These were divided as follows:—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Percentage
Manitoba	87	54	23	10	75.3
Lake Superior	93	64	22	7	80.6
Lower Lake Region.....	103	83	16	4	88.3
Georgian Bay.....	103	87	12	4	90.3
Ottawa Valley	104	81	19	4	87.0
Upper St. Lawrence.....	104	83	15	6	87.0
Lower St. Lawrence.....	103	87	11	5	89.8
Gulf.....	105	84	11	7	86.6
Maritime Provinces, West.....	122	97	19	6	87.3
Maritime Provinces, East.....	122	97	18	7	86.9
Total	1046	817	169	60	86.2

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,

Director

Meteorological Office, Toronto,
26th April, 1904.

MONTHLY and Annual Summaries for the Year 1903, Fort Chipewyan, North west Territories— Latitude, N 58° 42'
Longitude, W. 110° 40'. Height above Sea, — feet.

MONTH.	PRESSURE at 32.			TEMPERATURE.								RELATIVE HUMIDITY				PRESSURE OF VAPOUR.				CLOUD-NESS.				PRECIPITATION	
	Extremes.			Mean.				Extremes.																	
	Monthly Mean.	Max.	Min.	5 a.m.	1 p.m.	5 p.m.	Max.	Min.	Monthly	Max.	Min.	9 a.m.	11 p.m.	7 p.m.	Mean.	a.m.	p.m.	p.m.	Mean.	5 a.m.	1 p.m.	5 p.m.	Mean.	Total.	Maximum in any 24 hours.
	in.	in.	in.													m.	m.	m.	m.					in.	m.
January	29.118	29.69	28.35	9.4	5.6	9.2	1.6	18.6	8.5	38.0	10.0									56.47	40.48			1.40	0.80
February	29.156	29.86	28.00	5.9	3.0	1.7	9.8	10.3	0.3	39.0	48.0									63.69	56.63			0.80	0.80
March	29.257	29.75	28.45	2.2	12.4	6.6	17.0	5.3	5.8	38.0	35.0									68.63	39.56			0.33	0.15
April	29.200	29.71	28.27	20.5	29.4	24.8	33.7	13.9	23.8	48.0	45.0									66.53	57.59			1.30	0.60
May	29.117	29.66	28.68	35.7	41.2	41.7	49.3	29.0	30.1	71.0	3.0									52.57	52.54			2.08	1.00
June	29.138	29.68	28.71	56.3	63.1	60.4	67.2	45.5	56.3	81.0	31.0									60.61	59.60			1.01	0.83
July	29.134	29.56	28.80	62.6	68.4	65.6	71.6	53.6	62.6	82.0	30.0									55.55	63.58			1.07	0.26
August	29.188	29.55	28.75	58.0	65.8	61.0	70.1	49.2	59.7	84.0	26.0									41.53	43.46			1.35	1.02
September	29.107	29.56	28.53	41.5	46.9	42.6	50.3	35.9	43.1	68.0	26.0									68.77	76.74			2.66	1.30
October	29.000	29.50	28.30	30.6	36.1	33.7	38.8	26.6	32.7	55.0	16.0									67.75	67.70			0.50	0.40
November	29.111	29.69	28.32	14.6	18.4	16.5	21.8	10.6	16.2	51.0	10.0									65.76	58.66			0.98	0.41
December	29.208	29.73	28.46	4.7	5.5	2.6	8.6	7.1	0.7	33.0	36.0									70.69	61.67			0.78	0.20
Year	29.141	29.86	28.00	25.9	32.3	29.0	36.1	18.5	27.5	81.0	48.0									61.63	56.60			14.26	1.30

MONTH.	NUMBER OF WINDS FROM										Average Hourly Force.	Maximum Force.	Direction at time of Maximum Force.	No. of Gales.	NUMBER OF DAYS											
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.	Clear.					Partly Cloudy.	Cloudy.	Precipitation 40 in. or over.	Snow.	Hail.	Fair.	Fog.	Thunder Storms.	Lightning Alone.	Aurora.		
January	2	34	4	5	3	2	6	17	20	11	V	N.E.	1	11	9	11	5	8	0	23	0	0	0	0	0	
February	5	6	12	10	0	14	5	12	20	11	VII	S.W.	1	12	8	8	2	4	0	24	1	0	0	2	2	
March	12	17	1	9	1	12	4	17	17	11	V	N.	1	6	14	11	4	10	0	21	0	0	0	1	1	
April	5	21	15	5	2	9	1	8	24	11	IV	N.E.	0	7	12	11	3	4	0	26	6	0	0	0	0	
May	6	27	32	9	0	4	2	3	10	11	VI	N.E.	3	8	11	9	4	5	1	22	0	1	0	0	0	
June	6	13	19	12	5	7	6	11	11	11	VII	S.E.	1	6	12	12	2	0	0	23	0	3	0	0	0	
July	16	8	17	11	6	16	3	4	12	11	IV	S.W.	0	7	12	12	7	0	0	21	0	2	0	0	0	
August	2	15	11	12	5	21	1	6	17	11	VI	S.W.	2	12	11	8	4	0	0	24	1	1	0	1	1	
September	13	10	13	4	6	14	7	16	7	11	VI	W.	1	3	9	18	8	0	0	22	1	0	0	0	0	
October	4	11	15	15	5	15	11	7	10	11	VI	W.	1	5	10	16	5	5	0	25	1	0	0	0	0	
November	6	9	6	16	2	10	9	21	11	11	VI	S.E.	1	4	14	12	6	5	0	24	0	0	0	0	0	
December	2	16	6	3	1	8	9	26	22	11	VI	N.W.	1	6	10	15	8	21	0	21	0	0	0	0	0	
Year	79	187	157	111	36	132	64	118	181	11	VII	S.W. N.E.	13	87	135	143	58	62	1	276	4	7	0	4	4	

ERRATUM.—February Review. On page 22 it is stated that the minimum temperature for the year 1903, at Moose Factory was 44° 0 it should read -44° 0.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

APRIL, 1904.

No. 4.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

Over the lower mainland and islands of British Columbia the weather was comparatively mild and dry and there was also more sunshine than usual. During the first and third week there was much rain, fair weather with little precipitation occurring in most districts from the 8th to 11th and 21st to 31st. In this portion of the province vegetation was somewhat backward. Over the upper mainland the weather was mild and in most districts it was dry and exceedingly fine. During the first eight days it was comparatively cool after which there was a marked rise in the temperature when the little remaining snow on the lower levels quickly disappeared. By the 30th many wild plants were in full bloom.

The weather in the Northwest Territories, though mostly mild in Alberta, was comparatively cool in Assiniboia and Saskatchewan. With a few local exceptions the precipitation was unusually light and at some stations not any was recorded. During the first ten days there was much bright sunshine with low temperatures at night, after which the sky was frequently overcast and higher temperatures generally prevailed. By the 15th the snow, with the exception of a little in the woods, had disappeared, and by the end of the month vegetation had made good progress.

In Manitoba the weather was unusually cool and dry, precipitation being completely absent in a few districts. There was comparatively little change in the temperature until about the 15th when there was a marked rise and springlike weather continued to the 30th. Snow occurred occasionally during the month, but it was soon melted and by the 20th the ground was practically bare. Vegetation, though quite backward, made rapid progress during the last few days of the month, several wild plants blooming at this time.

In Ontario the weather was exceedingly dull, cold and wet, and there were few signs of spring until late in the month. Although the temperature was usually well above the freezing point during the day, frost generally occurred at night in most districts up to the 23rd when somewhat milder conditions followed. In most localities the weather was comparatively fine from the 3rd to 8th, also from the 17th to 22nd, rain or snow occurring frequently during intervening periods. Sleighing was possible in many places during the first few days of the month, and snow remained in the woods up to an unusually late date. In southern districts the ground continued frozen until about the 8th and much ice was still to be seen on northern lakes. Reports regarding vegetation were not very favorable, plant life being exceedingly backward and showing little growth until late in the month. In the Ottawa Valley vegetation was much more advanced than elsewhere.

In the Province of Quebec the weather conditions were somewhat similar to conditions in Ontario, but the departures from the normal were not so well marked, and in a few districts the temperature slightly exceeded the average and the precipitation was deficient. Although the temperature generally exceeded 35° in eastern and 40° in western counties during the day, frosts were frequent at night. Vegetation was backward and there was little growth until late in the month. Some snow was still lying in the woods on the 30th.

The weather in New Brunswick was somewhat dull, cool and wet, but the departures from the normal were not important and at Fredericton and Dalhousie the mean temperature slightly exceeded the average. Frost occurred almost every night up to the 23rd when more springlike conditions prevailed. The snow had disappeared from the open country by the 18th, but in the woods it remained until a much later date. Very little growth in vegetation was noticeable.

In Nova Scotia the weather was quite similar to that in New Brunswick, but the precipitation was more abnormal and frosts at night were not quite as frequent. Much rain occurred during the first three days, also from the 7th to 21st, and last two days of the month. A gale with much snow occurred on the 21st, but the ground was practically bare two or three days later. Vegetation was somewhat backward.

The weather in Prince Edward Island was generally dull, cool and wet, and springlike conditions were quite backward. Frosts were recorded almost nightly until the last three or four days of the month when the weather turned milder. Vegetation was practically dormant until the 29th.—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The range of departure from normal of the mean atmospheric pressure for April was 0.25 of an inch, the extremes being +0.16 of an inch at Battleford, N.W.T., and —0.09 of an inch at Ottawa, Ont. Mean pressure was subnormal over the greater portion of British Columbia, Ontario and Quebec, but exceeded the average in other districts.

HIGH AREAS.

Nine areas of high pressure were charted during the month, the majority being of much intensity. They all first appeared north of the 40th parallel of latitude and drifted in a general easterly direction to the Atlantic seaboard. A very pronounced system was the one between the 14th and 18th, which travelled from the far North-west to the New England States, accompanied by unseasonably low temperatures, particularly so in the Territories and Manitoba. Another marked area was that which moved into the Canadian North-west on the 17th and reached the Middle Atlantic States Coast on the 23rd accompanied by decidedly cold weather temperatures below zero, being recorded during its presence in Northern localities.

LOW AREAS.

Ten areas of low pressure were sufficiently defined to be charted, many of the number being of considerable intensity. Six entered the continent over the British Columbia Coasts, four first appeared in the far West States, and one passed up the Atlantic well off the United States coasts and to the southward of the Maritime Provinces.

The three areas which perhaps were the most noticeable for the weather conditions attending them were the one from the westward which passed over Ontario, Quebec and the Maritime Provinces between the 9th and 11th, accompanied by numerous showers, thunder storms and moderate gales, the rain turning in many cases to snow. Second—An area which drifted into British Columbia on the 13th from the Pacific, and thence south of the Lake Region, skirting the Maritime Provinces, bringing heavy snowfalls to Southern Ontario on the 15th; and on the 16th, to the southern portions of New Brunswick and to Nova Scotia. Third The important area which affected the Maritime Provinces between the 20th and 21st, causing fresh to heavy gales and heavy snowfalls. This latter system, having crossed the continent from Northern British Columbia reached the Ottawa Valley on the 18th, and subsequently passed off the New England Coast, rapid development then ensuing.

WINDS.

In British Columbia, over Vancouver Island and on the mainland, the wind was largely variable, but favouring slightly the southeasterly to southwesterly directions. There were twelve days with fresh breezes, five with strong and one gale.

In the North west Territories the easterly direction was the most general, and there were nine days with fresh and eleven with strong breezes.

In Manitoba the north and east directions were mostly in evidence, with nine days of fresh and eleven of strong breezes and two gales.

In the Lake Region the direction was variable, favouring somewhat the north and west, with five days of fresh and nine of strong breezes and four gales.

In the Ottawa and Upper St. Lawrence Valleys the direction was about as it was over the Lakes, with eleven days of fresh and eleven days of strong breezes and two gales.

In the Lower St. Lawrence Valley and the Gulf the easterly direction was most general, with eight days of fresh and twelve of strong breezes and one gale.

In the Maritime Provinces the direction was variable, slightly favouring the south and west. There were thirteen days of fresh and six of strong breezes and three gales. The only heavy gale was the one which occurred between the 20th and 21st; those on the 10th and 12th were moderate and somewhat local.

The Maritime Provinces only were warned during the month as owing to the lateness of the season navigation had barely begun elsewhere. The storms of the 10th and 20th were not warned and a warning issued on the 16th was not justified by subsequent dangerous winds.

BRIGHT SUNSHINE.

Bright sunshine was about the average from Vancouver island to Manitoba, and below the average in Ontario, Quebec and the Maritime Provinces. The percentage of possible duration ranged from 59 at Battleford and Winnipeg to 30 at Quebec and 28 at Woodstock, Ont.

TEMPERATURE.

The mean temperature of April was higher than the average in British Columbia and Alberta and probably also in all the more northern Canadian Territory, while it was below average in Assiniboia, Saskatchewan, Manitoba and from the Great Lakes eastward to the Maritime Provinces. Nearly the whole of British Columbia showed a positive departure of at least 3°, and the trend of the isotherms would indicate a still larger departure to the northward. At Dawson, Yukon, the mean temperature was 34° being 1° above average. The largest negative departure, 6°, occurred in South-western Ontario, near Lake Erie, whence northward and eastward the difference from the average became less, and in the Ottawa Valley and thence to the Maritime Provinces it did not exceed 1° or 2°.

The Highest and Lowest temperatures in each Province during April, 1904, were.

British Columbia,	85° 2' on 12th at Alberni.	4° 0' on 4th at Stuart's Lake.
North west Territories,	81° 0' on 28th at Didsbury.	2° 0' on 7th at Crescent Lake.
Manitoba,	81° 0' on 30th at St. Albans.	2° 0' on 15th at Bowsman.
Ontario,	75° 0' on 30th at Bruce Mines.	- 6° 0' on 20th at White River.
Quebec,	65° 0' on 20th at Sherbrooke.	7° 2' on 3rd at Chicoutimi.
New Brunswick,	67° 5' on 24th at Chatham.	4° 0' on 4th at Chatham.
Nova Scotia,	70° 0' on 30th at Bridgetown.	9° 3' on 4th at Parrsboro.
Prince Edward Island,	59° 1' on 30th at Charlottetown.	11° 2' on 1st at Hamilton.

PRECIPITATION.

The precipitation of the month was less than the average over the western half of the Dominion and very generally above the average from Lake Huron to the Maritime Provinces, except in parts of Eastern Quebec. In Saskatchewan it was almost nil, and in Alberta and Western Assiniboia amounted to about a few tenths of an inch. In Eastern Assiniboia and Manitoba it was somewhat greater, but in a few localities did it reach the average. In Ontario and Western Quebec, where the average was exceeded, it was mostly rain, but in all districts there were a few light snowfalls, and very much the same conditions obtained in the Maritime Provinces.

DEPTH OF SNOW AND THICKNESS OF ICE.

At the beginning of the month nearly the whole Dominion was snow covered; and in Saskatchewan, Manitoba, Northern Ontario, and in Quebec it was still quite deep. Before the 15th, however, nearly all the open country was bare, but even at the close of the month snow yet remained in the woods in Quebec and parts of New Brunswick.

The ice did not break up in the rivers of the North-West Territories until well on in the month, and at its close considerable drift ice was still reported in all the Great Lakes, the St. Lawrence River and Gulf of St. Lawrence. On May 1st the ice was solid 30 miles outwards from Port Arthur harbour, and on the Lower Lakes and St. Lawrence navigation had only just opened.

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, APRIL, 1901.

a Barometer not reduced to Sea Level. * Stations not furnished with Registering Thermometers.

STATION.	Latitude N.	Longitude W.	Pressure.			Temperature.						Direction of Wind from										Velocity of Wind.			Precipitation.			No. of fogs.	No. of hours.	No. of days.	Days with 1/4 or more.	No. of storms.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			Mean reduced.	Highest.	Lowest.	Range.	Mean.	Difference from average.	Years observed.	Highest.	Date.	Lowest.	Date.	Mean daily.	Mean temperature of range.	Mean relative humidity.	Mean amount of cloud.	No. of days completely clouded.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	C.						Total number of observations.	Mean miles per hour.	Highest days velocity.	Date and direction from.	Amount.	Difference from average.	Heavyest fall in month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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N. W. TERRITORIES (Con.)									
Chaplin.	30	27 106 40	2202						
Moos Jaw.	30	27 105 33	1715						
Regina	30	27 104 37	1885						
Indian Head	30	28 103 40	1924						
Cunningham Manor	30	28 102 2	2661						
Macleod	30	28 103 21	1879						
Gatesgarth (Dense)	30	29 105 6	1879						
Pincher Creek	30	29 111 1	3730						
Greenell	30	29 102 23							
Kneehill	30	29 113 17							
Muskoxpetung	30	30 104 30							
Fort Simpson	30	32 121 13	1892						
Alameda	30	32 102 17							
Dayson	30	32 103 20	2755						
Gray Hill	30	32 103 30	1371						
Saskatoon	30	32 106 30	2596						
Crane Lake	30	32 106 30	1884						
Moosomin	30	32 113 17	1670						
Albans Landing	30	32 102 25							
Calgary (Ex-Station)	30	32 103 4	1885						
Prescott Lake	30	32 103 4							
Estevan	30	32 103 4							
Medford	30	32 103 4							
Bedford	30	32 103 4							
Wetaskwin	30	32 103 20							
Beauvill	30	32 103 22							
Theriot Creek	30	32 102 31							
New Hope	30	32 103 33							
High River	30	32 103 33							
Omaha	30	32 103 33							
Cardston	30	32 103 33							
Rocky	30	32 103 33							
Hilldown	30	32 103 33							
Winnipeg	30	32 103 33							
Manitoba	30	32 103 33							
St. Albert (Avenue)	30	32 103 33							
Fort Osborne	30	32 103 33							
Brandon	30	32 103 33							
Chamell Land	30	32 103 33							
Stony Mountain	30	32 103 33							
Tricherie	30	32 103 33							
Billings	30	32 103 33							
Minneapolis	30	32 103 33							
Pipestone	30	32 103 33							
Boxman	30	32 103 33							
Oakbank	30	32 103 33							
Portage la Prairie	30	32 103 33							
Pembina Crossing	30	32 103 33							
Denham	30	32 103 33							
Edmonton	30	32 103 33							
Fort Worth	30	32 103 33							
Cartwright	30	32 103 33							
Morden	30	32 103 33							
ONARIO	30	32 103 33							
Haldenbury	30	32 103 33							
Sudbury	30	32 103 33							
Savannah	30	32 103 33							
Schreiber	30	32 103 33							
Collins	30	32 103 33							
Beaufort	30	32 103 33							
Perry Sound	30	32 103 33							
Owen Sound	30	32 103 33							
Bedford	30	32 103 33							
Goldwater	30	32 103 33							
Gravenhurst	30	32 103 33							
Haddon	30	32 103 33							
Pond Creek	30	32 103 33							
Braman	30	32 103 33							

[illegible]

OBSERVATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
APRIL, 1904.

STATIONS.	RAIN FALL.					SNOWFALL.					REMARKS.
	Amount in inches.	No. of Days of or Over.	No. of Fair Days.	Heaviest Fall in Month	Date.	Amount in inches.	No. of Days.	Heaviest Fall in Month	Date.		
	in.			in.		in.		in.			
BRITISH COLUMBIA—											
Goldstream Lake.	2 18	18	12	0 95	5	.....	.....	.....	.....
Kuper Island.	1 73	12	18	0 72	5	.....	.....	.....	.....
Nanaimo.	1 68	4	26	1 01	5	.....	.....	.....	.....
Sooke Lake.	1 35	6	24	0 93	5	.....	.....	.....	.....
Nas Harbour.	4 14	11	19	1 00	8	.....	2	.....	1	Frost on 30.
Port Essington.	5 76	20	10	1 01	9	.....	.....	.....	.....
Royal Oak.	0 94	4	26	0 73	4	.....	.....	.....	.....
N. W. TERRITORIES—											
Victoria.	0 11	1	29	0 11	29	.....	1	.....	5	Aurora 8, 10, 17, 18; thun- der 29.
Weyburn.	0 49	2	27	0 27	21	0 5	1	0 5	1	Thunder on 30.	
Salcoats.	.....	.....	28	.....	22	2 0	2	2 0	7	Thunder on 30.
Sterling.	0 70	3	27	0 40	22	.....	.....	.....	.....
Conits.	R	.....	29	R	22	.....	.....	.....	.....
Dirt Hills.	0 80	2	25	0 50	21	2 0	4	1 0	7		
Beaver Hills, W.	0 15	5	24	0 05	23	0 1	1	0 1	4	Aurora 1, 2, 7, 9, 10, 12, 17; thunder 28.	
Briederheim.	R	.....	29	R	29	.....	.....	.....	.....
Regina.	0 17	2	23	0 09	23	1 0	4	1 0	6		
Lacombe.	R	.....	26	R	28	2 0	4	2 0	22	
Imperial.	0 27	2	25	0 24	30	3 0	4	1 5	6	1 hail. Thunder 29.	
Beaver Hills, E.	0 07	2	.....	0 05	30	.....	.....	.....	.....
MANITOBA—											
Norquay.	0 05	1	21	0 05	22	8 8	8	4 0	15	26, first spring-like day.	
Cartwright.	0 13	1	27	0 13	22	4 0	2	2 0	14	17, aurora.	
Gretna.	0 64	3	23	0 47	23	6 3	5	3 5	14	29, seeding commenced.	
Oakdale Park.	0 49	2	25	0 35	30	6 0	3	6 0	7	28, very warm, ther. 72.	
Rapid City.	R	.....	18	R	.....	10 0	5	6 0	14	Blizzard 14; thunder 30.
Belmont.	0 24	6	21	0 09	14	.....	6	.....	.....	Aurora 1.
Deloraine.	0 07	2	27	0 04	23	0 7	2	0 7	14	Aurora 18.	
ONTARIO—											
Unbridge.	2 02	9	19	0 70	1	5 0	3	2 5	19	Thunder storm 9.	
Ardan.	3 02	12	17	0 74	10	4 0	4	2 0	20	Aurora 19.	
Oliver's Ferry.	2 99	9	19	1 59	10	5 0	2	5 0	19-20		
Sydenham.	1 07	5	24	2 00	9	2 0	1	2 0	20		
Smith's Falls.	2 80	8	20	0 67	9	5 0	2	5 0	21	Thunder 8.	
Huntsville.	2 86	6	22	1 45	24	3 0	2	2 0	12	Aurora 18.	
Lion's Head.	2 06	9	21	0 41	9	.....	1	.....	12	
Deer Park.	2 90	8	17	0 69	23	5 5	6	4 5	16		
Ennismore.	1 30	4	25	0 50	12	4 0	19	4 0	19	Thunder 8.	
Dealtown.	1 57	7	21	0 53	8	3 1	2	1 9	15		
Sunshine.	1 91	9	19	0 43	25	5 0	2	3 0	16		
Providence Bay.	2 30	9	19	0 95	24	2 0	2	2 0	11-12	13, ice gone from bay.	
Dutton.	0 12	1	26	0 12	11	12 5	1	12 0	15		
Ensdale.	2 72	12	16	0 89	24	3 0	6	2 0	19	Aurora 7; thunder 9, 24	
Westminster.	3 16	6	19	1 35	1	8 0	5	8 0	15		
Jermyn.	2 41	7	20	0 75	1	3 0	2	3 0	19		
Croydon.	3 39	5	22	1 45	10	3 0	3	3 0	12	Thunder 9.	
Lansdowne.	1 11	6	22	0 38	9	3 0	2	2 0	20		
Georgetown.	2 27	13	10	0 60	1	9 6	8	3 5	16	Aurora 3, 4, 7, 9, 18.	
Goderich.	2 10	6	21	0 50	1	9 0	3	5 0	15		
Searborn.	1 80	9	16	0 41	28	4 5	7	3 0	15	Thunder 9.	
Montague.	3 62	8	20	1 19	9	4 0	2	4 0	19-20	Thunder 9.	
Parma.	3 61	11	17	0 85	10	6 0	3	3 0	21	Heavy thunder 9.	
Orangeville.	0 80	3	17	0 42	9	8 8	10	2 8	16	Thunder 21.	
Port Burwell.	1 71	8	11	0 71	21	9 0	3	8 0	16		
Wyoming.	1 60	7	22	0 50	1	8 0	2	8 0	15	Thunder 1, 24.	
Wharton.	2 29	8	16	0 43	24	1 7	6	1 0	13	Thunder 9, 24.	
Midland.	1 73	7	19	0 57	1	.....	4	.....	.....	Aurora 3; thunder 9, 24.
Westport.	2 82	5	21	1 61	9	8 5	4	3 0	19	Thunder 9; Blizzard 29.	
Uxas.	1 45	9	17	0 50	9	11 0	4	1 0	19	Thunder 9.	
Watford.	2 44	4	.....	0 75	8	.....	.....	.....	.....
Niagara.	1 41	3	5	0 62	8	8 0	2	6 0	15		
N. Williamsburg.	1 88	7	19	0 90	29	6 0	.....	.....	.....
NEW BRUNSWICK—											
Point Escombre.	0 50	5	20	0 26	30	10 7	5	3 1	3		
NOVA SCOTIA											
Port Morden.	2 17	7	22	0 72	10	6 0	1	6 0	16		

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE
SUN WAS ABOVE THE HORIZON IN THE MONTH OF APRIL, 1904

	HOURS ENDING.															
	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Victoria		0.43	0.20	0.36	0.45	0.49	0.58	0.64	0.66	0.56	0.61	0.55	0.51	0.28	0.05	
Nanaimo		0.06	0.37	0.57	0.52	0.58	0.54	0.55	0.48	0.53	0.52	0.48	0.41	0.35	0.08	
Agassiz		0.00	0.02	0.48	0.39	0.52	0.48	0.52	0.55	0.51	0.48	0.39	0.35	0.16	0.06	
Battleford	0.26	0.57	0.59	0.61	0.66	0.64	0.70	0.69	0.73	0.65	0.63	0.53	0.50	0.39	0.05	
Indian Head		0.09	0.23	0.29	0.47	0.58	0.59	0.65	0.65	0.57	0.52	0.48	0.29	0.03		
Brandon		0.09	0.43	0.52	0.54	0.59	0.61	0.62	0.63	0.56	0.58	0.59	0.42	0.03		
Winnipeg		0.10	0.36	0.53	0.64	0.67	0.72	0.65	0.62	0.64	0.66	0.62	0.54	0.26	0.06	
Woodstock		0.00	0.04	0.31	0.36	0.35	0.37	0.40	0.35	0.37	0.44	0.36	0.33	0.32	0.00	
Toronto		0.11	0.36	0.40	0.42	0.36	0.39	0.40	0.37	0.45	0.49	0.37	0.29	0.04		
Lindsay		0.03	0.19	0.32	0.45	0.43	0.42	0.44	0.39	0.39	0.38	0.28	0.24	0.22	0.10	
Barrie																
Gravenhurst		0.03	0.30	0.42	0.47	0.40	0.45	0.45	0.41	0.45	0.50	0.48	0.45	0.43	0.29	
Kingston		0.00	0.12	0.27	0.39	0.48	0.40	0.37	0.37	0.38	0.34	0.34	0.28	0.16	0.00	
Ottawa		0.02	0.20	0.36	0.44	0.42	0.44	0.39	0.40	0.40	0.37	0.35	0.33	0.17	0.01	
Montreal		0.00	0.04	0.28	0.43	0.42	0.41	0.46	0.44	0.44	0.36	0.38	0.29	0.05	0.00	
Quebec		0.00	0.14	0.36	0.49	0.41	0.44	0.38	0.35	0.36	0.40	0.34	0.30	0.17	0.01	
Fredericton		0.00	0.28	0.41	0.45	0.44	0.47	0.46	0.44	0.45	0.46	0.45	0.47	0.33	0.04	
<hr/>																
	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Barrie.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.
Mean proportion for month (Constant sunshine being 1.)	0.43	0.44	0.34	0.59	0.40	0.45	0.59	0.28	0.33	0.31		0.41	0.29	0.32	0.34	0.30
Difference from average.....	0.04	—	0.10	0.07	0.01	0.01	0.02	0.15	0.16	0.18		0.18	0.15	0.16		0.05
Maximum daily amount.....	0.87	0.92	0.80	0.99	0.84	0.89	0.89	0.83	0.85	0.95		0.96	0.86	0.87	0.88	0.84
Date.....	12	27	11	16	15	29	19	22	21	4		27	22	22	4	22
No. of days completely clouded	2	2	7	3	5	7	4	41	6	10		5	7	9	8	7

Aurora recorded:—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. Beaver Hills W., II; Moosejaw, Estevan, IV; Belmont, I; Edmonton, II; Prince Albert, I; Barnardo; Onion Lake, II.

2. Beaver Hills W., IV; Estevan, IV; Foxleigh, St. Albans, IV; Savanne, Battleford, II; Prince Albert, II; Onion Lake, III.

3. Georgetown, IV; Midland, Estevan, IV; St. Albans, III; Hillview, IV; Lucknow, IV; Brantford, IV; N. Bruce, Haileybury, III; Gravenhurst, III; Parry Sound, IV; White River, III; Sherbrooke, IV; Channel Island IV; Onion Lake, I.

4. Georgetown, IV; Truro, IV.

5. Beaver Hills W., III; Emsdale, IV; Georgetown, IV; Threehills Creek, IV; Regina, III; Hillsdown, IV; Foxleigh, Lucknow, IV; Gravenhurst, III; Swift Current, IV; Onion Lake, IV.

6. Victoria, Alta, II; Hillview, IV; Channel Island, IV.

7. Beaver Hills W., Threehills Creek, IV.

8. Victoria, Alta, III; Beaver Hills W., I; Threehills Creek, II; Quebec, IV.

9. Estevan, IV; Chicoutimi, Edmonton, II; Onion Lake, III.

10. Beaver Hills W., I; Threehills Creek, IV; Estevan, IV; Foxleigh, St. Albans, III; N. Bruce; Onion Lake, III.

11. Edmonton, IV; Minnedosa, III.

12. Onion Lake, IV.

13. Onion Lake, II.

14. Victoria, Alta, I; Beaver Hills W., II; Cartwright, II; Moosejaw, Threehills Creek, II; Hillsdown, I; Foxleigh, St. Albans, III; Almasippi, Port Arthur, II; Swift Current, IV; Channel Island, IV.

15. Victoria, Alta, I; Huntsville, III; Georgetown, IV; Moose Jaw, Threehills Creek, III; Hillsdown, IV; St. Albans, I; Almasippi, Mo den, Clontarf, IV; Savanne, Truro, IV; Edmonton, II; Winnipeg, III; Minnedosa, III; Barnardo, Deloraine, Channel Island, III; Onion Lake, I.

16. Arden, Port Arthur, I; White River, III; Edmonton, III; Swift Current, Winnipeg, III.

17. Threehills Creek, III; Estevan, IV; Onion Lake, I.

18. Edmonton, III.

Thunder recorded on:—

1. Arden, Wyoming, N. Bruce, Point Clark, Port Stanley.

2. Bermuda.

3. Nelson, Bermuda, Chilliwack.

4. Smith's Falls, Ennismore, Stony Creek, Birnam, Hamilton.

5. Uxbridge, Arden, Emsdale, Croydon, Georgetown, Scarboro', Toronto, Montague, Parma, Wiarton; Midland, Westport, Ursa, Bala, Orillia, N. Gower, Kinnmount, Meaford, Lucknow, Uplands, Haliburton, Beatrice, Port Hope, Agincourt, Shawinigan Falls, Gravenhurst, Parry Sound, Ottawa, Sherbrooke.

6. Vankleek Hill, Chicoutimi, Windsor, N. S., Lindsay, Father Point.

7. Parrshoro'.

8. Uxbridge, Wolfville, Pictou, Sherbrooke.

9. Princeton.

10. Quesnel.

11. Cranbrook.

12. Bermuda.

13. Point Clark.

14. Emsdale, Orangeville, Wyoming, Wiarton, Midland, Bala, N. Bruce, Clinton, Meaford, Lucknow, Birnam, Haliburton, Beatrice, Abitibi, Deseronto, Gravenhurst, London, Parry Sound, Kingston, Quebec, Saugeen, Port Stanley.

15. West Kootenay, Nicola Lake.

16. Beaver Hills W., Bon Accord, Medicine Hat.

17. Beaver Hills E., Victoria, Alta, Chaplin, Grenfell, Moosomin, Estevan, Saskatoon, Edmonton.

18. Weyburn, Saltcoats, Oakdale Park, Rapid City, Indian Head, Hillview, Brandon, Truro, Ottawa, Barnardo, Pictou.

Appearance of Spring Birds, &c.

SWALLOWS.—Victoria, Alta., 30th; Ennismore, 22nd; Ursa, 24th; Alberni, 8th; North Nicomen, 8th; Tobacco Plains, 18th; Clinton, 21th; Rat Portage, 27th; Lakefield, 8th; Stony Creek, 27th; Brantford, 27th; Agincourt, 24th; Grand Manan, 23rd; Port Stanley, 11th; Rivers Inlet, 11th; Massett, 6th.

HUMMING BIRDS.—Kuper Island, 9th; Rivers Inlet, 13th;

PURPLE GRACKLES.—Scarboro', 1st.

MEADOW LARK.—Foxleigh, 10th; Weyburn, 10th; Norquay, 4th; Estevan, 6th; Regina, 8th; Almasippi, 3rd; Meaford, 18th; Stony Creek, 16th; Agincourt, 5th; Minnedosa, 1st; Qu'Appelle, 17th.

BLACKBIRD.—Norquay, 19th; Wiarton, 5th; Westport, 3rd; Big Creek, 1st; Crescent Lake, 25th; Gatesgarth, 22nd; Hillview, 22nd; Bala, 9th; Meaford, 2nd; Lakefield, 1st; Stony Creek, 1st; Lindsay, 3rd; Picton, 10th; Peterboro', 1st; Stuart Lake, 2nd.

WILD GESE.—Foxleigh, 2nd; East Beaver Hills, 8th; Weyburn, 9th; Norquay, 3rd; Gretna, 4th; Westport, 13th; Tobacco Plains, 3rd; Wetaskiwin, 8th; Moose Jaw, 3rd; Chaplin, 3rd; Knee Hill, 3rd; Estevan, 4th; Regina, 5th; Hillsdown, 2nd; Gatesgarth, 4th; Oakbank, 25th; Hillview, 4th; Brandon, 2nd; Almasippi, 3rd; Stony Creek, 21st; Beatrice, 27th; Abitibi, 23rd; St. Stephen, 11th; Qu'Appelle, 1st; Channel Island, 22nd; Onion Lake, 17th; Stuart Lake, 5th.

GULLS.—Ennismore, 16th; Gravenhurst, 21st; Channel Island, 24th.

JUNCOS.—Rat Portage, 25th.

WOODPECKERS.—Crescent Lake, 27th; Agincourt, 25th.

DUCKS.—Foxleigh, 18th; East Beaver Hills, 7th; Victoria, Alta., 9th; Bruderheim, 17th; Norquay, 19th; Westport, 12th; Knee Hill, 2nd; Estevan, 4th; Hillsdown, 4th; Gatesgarth, 13th; Abitibi, 23rd; Big Creek, 1st; Crescent Lake, 18th; Wetaskiwin, 8th; Moose Jaw, 25th; Chaplin, 5th; Emerson, 7th; Onion Lake, 11th.

ROBINS.—Foxleigh, 2nd; Victoria, Alta., 24th; West Beaver Hills, 17th; Innisfail, 1st; Norquay, 18th; Emsdale, 5th; Rat Portage, 26th; Uplands, 5th; Savanne, 29th; St. Stephen, 11th; Haileybury, 17th; Big Creek, 1st; Cranbrook, 2nd; Estevan, 27th; Hillsdown, 9th; Gatesgarth, 18th; Picton, 6th; Minnedosa, 1st; Barkerville, 12th; Onion Lake, 27th.

CROWS.—Foxleigh, 28th; Norquay, 1st; Wetaskiwin, 3rd; Chaplin, 1st; Estevan, 3rd; Hillsdown, 6th.

HAWKS.—East Beaver Hills, 5th; Victoria, Alta., 4th; West Beaver Hills, 4th; Crescent Lake, 4th; Estevan, 3rd; Hillview, 6th.

BLUE BIRD.—Norquay, 30th; Nelson, 10th; Cranbrook, 3rd; North Nicomen, 8th; Tobacco Plains, 3rd; Princeton, 15th; Agincourt, 5th; Onion Lake, 19th.

FROGS.—Lindsay, 7th; Beaver Hills, 17th; Bruderheim, 18th; Norquay, 26th; Arden, 23rd; Huntsville, 25th; Emsdale, 28th; Hillsdown, 9th; Gatesgarth, 27th; Oakbank, 26th; Hillview, 19th; Sutton, 6th; Estevan, 25th; Ursa, 25th; Nelson, 11th; North Nicomen 1st; Crescent Lake, 26th; Knee Hill, 13th; Regina, 25th; Lakefield, 20th; Stony Creek, 10th; Lucknow, 6th; Clontarf, 24th; Savanne, 27th; Beatrice, 26th; Agincourt, 26th; Brome, 9th; St. Stephen, 24th; Windsor, 9th; Gravenhurst, 26th; London, 24th; Edmonton, 24th; Winnipeg, 25th; Picton, 24th; Edmonton, 24th; Winnipeg 25th; Banff, 21st; Qu'Appelle, 7th; Emerson, 23rd; Onion Lake, 27th.

FORECASTS FOR APRIL, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1042. These were divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Percentage
Manitoba.....	88	67	14	7	84.1
Lake Superior.....	100	78	18	4	87.0
Lower Lake Region.....	117	102	11	4	91.9
Georgian Bay.....	115	94	14	7	87.8
Ottawa Valley.....	98	77	17	4	87.2
Upper St. Lawrence.....	97	76	17	4	87.1
Lower St. Lawrence.....	104	81	15	8	85.1
Gulf.....	101	75	15	11	81.7
Maritime Provinces, West.....	111	81	24	6	83.8
Maritime Provinces, East.....	111	76	27	8	80.6
Total.....	1042	807	172	63	85.7

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

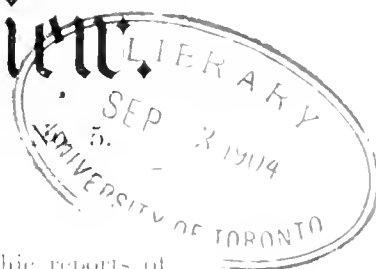
R. F. STUPART,
Director

Meteorological Office, Toronto,
26th May, 1904.

Monthly Weather Review.

VOL. XXVIII.

MAY, 1904.



INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

Throughout the greater portion of British Columbia the weather was unusually fine, cool and dry. Most of the precipitation occurred between the 3rd and 8th, 14th and 18th, and on the 31st, much bright sunshine being general during the intervening periods. High temperatures were general from the 14th to 18th, and 20th to 31st, 80° being exceeded at a few stations on or about the 12th and 22nd. Light frosts were recorded at many places during the month, but little damage was caused thereby and the condition of vegetation was excellent on the 31st.

In the North-west Territories the weather was somewhat dull, cool and dry, excepting in a few districts, more especially in the northern portion, where on the contrary it was somewhat wet. Frequent and sudden changes of temperature were a feature of the weather of May, and although frequently warm during the day, the nights were cool and frosts occurred in many places. The precipitation and date of occurrence varied with the district, some stations recording many light falls, whilst in others they were few but heavy. The condition of vegetation was abnormally good.

The weather in Manitoba was generally fine, warm and dry, but the difference from average was not great, excepting in the rainfall which in some districts was quite light. Comparatively warm days and quite cool nights were general, the mean daily range at St. Albans exceeding 30°. Heavy rains occurred on or about the 5th, causing floods in some districts. Reports regarding the condition of vegetation were on the whole very favourable.

In Ontario the weather was exceedingly fine and warm during the first eight days, after which cooler weather was general from about the 9th to 11th, and from the 14th to the 20th. High temperatures then followed and continued until the end of the month. Much rain was recorded in western and northern districts, more especially from the 10th to 27th, and locally on the 31st, whilst in most eastern counties it was below the average. Throughout the Province the mean temperature was excessive and vegetation, which was backward on the 1st, made fair progress; deficient bright sunshine and excessive rain in some districts, however, have affected it adversely.

In the Province of Quebec the weather was mostly fine and comparatively warm during the first half of the month, whilst the second half was generally dull, cooler and wet, excepting from the 23rd to 25th and during the last three days of the month when, in most districts, it was fair. During this latter period high winds were frequent near to and east of the City of Quebec. The condition of vegetation was somewhat below normal.

In New Brunswick the weather was mostly fair during the first nine or ten days, also from the 13th to 15th and 24th to 31st, rain being frequent during the intervening periods. From the 2nd to 9th when high temperatures occurred the daily range was unusually large, 41.0 and 45.0 being recorded at Sussex on the 4th and 6th respectively. Frosts were noted during the first week in most districts, but little damage appears to have been caused thereby and vegetation was normal.

The weather in Nova Scotia was mostly fine, warm and dry. Rain was recorded at most places on the 1st and showers were somewhat frequent from the 11th to 21st, fog also occurring during the latter period and upon several other days during the month. Temperatures exceeding 70° were frequent at southern stations after the 4th, but the nights were generally cool and light frost was recorded at many places during the first week. Reports regarding vegetation were exceedingly favourable.

In Prince Edward Island the weather was exceedingly fine from the 2nd to 11th, after which it was mostly dull, but there was little rain until the 20th when showers occurred and continued almost daily up to the 28th. Few high temperatures were recorded until after the 22nd, but the mean of the month at Charlottetown exceeded the average. Light frosts occurred during the first week. Vegetation was normal.

E. F. PAYNE.

ATMOSPHERIC PRESSURE.

Departures from average mean atmospheric pressure were small except in the Pacific and Atlantic Provinces where an excess of 0.18 of an inch was recorded at Barkerville, B.C., and 0.09 of an inch at North Sydney, C.B., N.S. In other portions of Canada the mean pressure was normal or slightly below. The subnormal extreme was 0.05 of an inch at Prince Albert, N.W.T.

HIGH AREAS.

Eight areas of high barometric pressure were charted during May. Their paths were for the most part erratic, but in the majority of instances the passage across the continent was completed.

The systems were of fair intensity, and in many cases were accompanied by cold weather.

The nearest approach to a normal course was that followed by an area which during the night of the 28th moved into Manitoba from the northwestward, and pursued an easterly path across Ontario to the Maritime Provinces, reaching there on the 31st.

LOW AREAS.

The paths assumed by the centres of barometric depressions during May were well scattered over the continent, the course most favoured being over the lakes and down the St. Lawrence to the Gulf. For the most part the areas were of moderate intensity but one moderate gale was experienced in the Lake Region; in the Gulf of St. Lawrence hot periods were rare and of short duration, but rain and thunderstorms, the latter often locally severe, attended the depressions. Eleven areas were sufficiently well marked to be charted.

The area which was most pronounced moved over California on the 1st to Minnesota by the 6th and on the 8th was joined by a depression which had moved from British Columbia to Lake Superior between the 3rd and 7th. The combined system then crossed the Great Lakes, accompanied by a moderate gale on the 9th, and with a barometer reading, reduced to sea level, of 29.28 inches. The disturbance then drew away to the New England Coast, where on the 10th it was further reinforced by a subsidiary from the Middle Atlantic States. After this junction, the system gradually moved south-eastward.

WINDS.

In British Columbia over Vancouver Island and the mainland the direction was chiefly south-westerly to southeasterly with eighteen days of fresh and four of strong breezes and one gale.

In the Northwest Territories the south and west directions predominated with fifteen days of fresh and nine of strong breezes and one gale.

In Manitoba the direction was variable with thirteen days of fresh and nine of strong breezes and one gale.

In the Lake Region the south and west directions were most in evidence with twelve days of fresh and five of strong breezes and one moderate gale which occurred on the 9th.

In the Ottawa and Upper St. Lawrence Valleys the south and west directions prevailed with fourteen days of fresh and five of strong breezes and one moderate gale.

In the Lower St. Lawrence Valley and the Gulf the direction was largely variable, but favouring somewhat the easterly. There were ten days with fresh and fourteen days with strong breezes.

In the Maritime Provinces the southwesterly to southeasterly directions were most prevalent with fifteen days of fresh and seven days of strong breezes.

The moderate gale which occurred in the Lake Region on the 9th was duly warned.

BRIGHT SUNSHINE.

During May the bright sunshine recorded in Canada was sub-normal over the Northwest Territories and Western Ontario, and in excess of the average elsewhere. The extremes of departure from normal were -0.09 at Brandon, Man., -0.07 at Victoria, B.C.; Agassiz, B.C.; and Winnipeg, Man., and $+0.11$ at Indian Head, N.W.T.

TEMPERATURE.

The temperature was below the average over British Columbia and the western portion of the Northwest Territories and above the average elsewhere throughout the Dominion. The most marked positive departures were recorded in the Ottawa and Upper St. Lawrence Valleys, Montreal and Ottawa, each being 5 degrees; Quebec City was 4 degrees, the Peninsular of Ontario about 3 degrees, Manitoba and the Maritime Provinces 2 degrees. The chief negative departures were Barkerville, 5 degrees; Kamloops, 4 degrees; Battleford, 3 degrees.

The highest and lowest temperatures in each province during May, 1904, were,

British Columbia,	85° 0 on 12th at Spence's Bridge,	15° 0 on 5th at Nickle Plate,
N. W. Territories,	85° 0 on 20th at Didsbury,	5° 0 on 24th at Macleod,
Manitoba,	85° 0 on 19th at St. Albans,	22° 0 on 9th at Treherne,
Ontario,	89° 0 on 25th at Cottam & Chatham,	9° 0 on 11th at White River,
Quebec,	83° 6 on 9th at Chicoutimi,	25° 0 on 6th at Father Point,
New Brunswick,	82° 0 on 9th at Moncton,	24° 5 on 8th at St. Stephen,
Nova Scotia,	83° 0 on 27th at Wolfville,	22° 0 on 7th at Sydney,
Prince Edward Island,	74° 4 on 8th at Charlottetown,	26° 8 on 2nd at Charlottetown,

PRECIPITATION.

The rainfall was very deficient over British Columbia, as well as over Manitoba and the Northwest Territories, except locally in the Qu'Appelle Valley and Northeastern Saskatchewan. It was also below the average in portions of Ontario east and north of the eastern part of Lake Ontario. Eastern Nova Scotia and Prince Edward Island were likewise below average, whereas Quebec and the large remaining portions of Ontario and the Maritime Provinces were nearly everywhere well above the average. The most noticeable positive departures were Father Point, 4 inches; Montreal, 2 inches; Parry Sound, 2.4 inches; and the chief negative departures Barkerville, 1.5 inches; Kamloops and Edmonton, 1.2 inches; Minnedosa, 0.8 inches; Sydney, 1.5 inches; Charlottetown, 1.0 inches.

ROBERTSON, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, MAY, 1911

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PRECIPITATIONS AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING MAY, 1904.

STATIONS.	RAIN FALL.				REMARKS.
	Amount in inches.	No. of Days 50 or Over.	No. of Fair Days, in Month.	Heaviest Fall Date.	
BRITISH COLUMBIA—	in.			in.	
Royal Oak,	0.76	8	23	0.31	4
Goldstream Lake,	2.01	11	20	0.51	5
Sooke Lake,	1.58	4	27	0.53	6
Nanaimo,	0.91	4	27	0.53	17
Nasas Harbour,	5.34	13	18	2.79	3
Port Essington,	5.50	22	9	0.58	7
Cowichan,	2.21	4	27	1.20	17
N. W. TERRITORIES—					
Regina,	1.69	10	21	0.85	5
Port Hills,	2.59	6	21	0.78	16
Victoria,	1.67	6	19	1.09	11
Lacombe,	2.10	3	22	1.20	29
Bruderheim,	0.88	6	25	0.23	4
Beaver Hills, W.	0.89	9	29	0.33	11
Courts,	2.11	5	26	1.69	2
Sterling,	1.08	7	24	0.56	31
Weyburn,	2.30	11	24	0.85	19
Saltcoats,	1.27	5	25	0.49	30
Innisfail,	0.88	10	19	0.28	27
Oak Lake Park,	2.95	4	26	2.60	22
MANITOBA—					
Belmont,	0.95	5	26	0.56	12
Cartwright,	1.43	5	22	0.97	11
Delomine,	0.20	2	29	0.13	30
Rathwell,	1.99	7	24	0.79	11
Beaver,	0.89	2	29	0.79	30
Royal City,	0.82	5	15	0.62	36
Norway,	1.63	6	23	0.62	12
Grinco,	2.06	8	22	0.38	12
ONTARIO—					
Dutton,	1.40	6	25	0.40	13
Niagara, S.	4.30	8	23	1.40	18
Warton,	2.71	6	25	1.19	19
Emmushore,	2.38	7	24	1.05	13
Long's Head,	4.54	12	19	1.50	19
St. Catharines,	4.62	8	23	1.79	20
Westport,	2.69	9	22	1.32	26
Westminster,	1.79	11	20	0.65	14
Dealtown,	3.19	10	21	0.94	19
Princeton,	4.22	13	18	1.49	31
Montague,	3.22	5	26	1.05	20
Midland,	3.81	11	20	0.83	26
Deer Park,	4.34	5	26	2.06	19
Aurora,	3.72	9	22	1.17	18
Lansdowne,	2.08	7	24	0.86	29
Oliver's Ferry,	1.58	4	27	0.79	15
Watford,	3.26	7	24	1.00	26
Ardara,	2.24	11	20	0.53	26
Orangeville,	4.17	10	21	1.80	18-19
Scarborough,	4.13	8	13	1.82	18
Croydon,	1.55	4	27	0.65	15
Wyoming,	2.65	6	23	1.60	26
Parham,	1.58	7	24	0.43	15
Uxbridge,	2.90	12	19	1.00	19
Georgetown,	3.92	15	14	1.39	18
N. Williamsburg,	1.83	6	25	1.08	29
Goderich,	1.70	5	26	0.60	26
Sunshine,	3.12	7	24	1.13	19
Jernyn,	2.50	4	27	0.99	17
Smith's Falls,	2.44	4	22	1.00	21
Ensdale,	1.63	14	16	0.90	26
Uxale,	4.46	16	15	1.20	25
Huntsville,	3.80	9	22	1.10	26
NEW BRUNSWICK—					
Point Escomiac,	1.26	7	23	0.38	11
NOVA SCOTIA					
Port Morden,	2.63	6	25	0.96	27

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE
SUN WAS ABOVE THE HORIZON IN THE MONTH OF MAY, 1904

	HOURS ENDING															
	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.
Victoria	0.00	0.16	0.35	0.53	0.58	0.61	0.61	0.59	0.62	0.62	0.62	0.63	0.64	0.60	0.28	
Nanaimo	0.06	0.37	0.43	0.46	0.53	0.56	0.55	0.53	0.53	0.53	0.53	0.52	0.55	0.56	0.37	8
Agassiz	0.00	0.20	0.32	0.44	0.55	0.54	0.57	0.55	0.54	0.56	0.54	0.51	0.49	0.36	0.06	
Battleford	0.20	0.38	0.51	0.52	0.54	0.52	0.57	0.62	0.58	0.53	0.53	0.41	0.42	0.38	0.22	6.01
Indian Head	0.07	0.39	0.45	0.38	0.46	0.48	0.45	0.46	0.41	0.48	0.43	0.40	0.35	0.14		
Brandon	0.00	0.28	0.64	0.75	0.79	0.83	0.83	0.82	0.78	0.76	0.72	0.60	0.50	0.23		
Winnipeg	0.33	0.56	0.66	0.71	0.76	0.81	0.79	0.83	0.79	0.71	0.68	0.61	0.55	0.35		
Woodstock	0.10	0.37	0.47	0.52	0.57	0.61	0.58	0.49	0.51	0.54	0.49	0.47	0.48	0.09		
Toronto	0.07	0.38	0.52	0.52	0.50	0.51	0.51	0.58	0.64	0.69	0.68	0.51	0.40	0.19		
Lindsay	0.09	0.30	0.50	0.49	0.57	0.57	0.50	0.53	0.58	0.62	0.55	0.35	0.33	0.23	0.02	
Gravenhurst	0.15	0.43	0.47	0.54	0.55	0.60	0.57	0.61	0.66	0.65	0.65	0.66	0.55	0.49	0.27	
Kingston	0.05	0.43	0.50	0.58	0.68	0.67	0.63	0.65	0.65	0.62	0.64	0.61	0.48	0.20		
Ottawa	0.25	0.51	0.57	0.63	0.67	0.67	0.60	0.73	0.70	0.63	0.59	0.50	0.38	0.11		
Montreal	0.18	0.40	0.59	0.62	0.64	0.63	0.61	0.62	0.67	0.70	0.66	0.55	0.40	0.03		
Quebec	0.07	0.25	0.36	0.38	0.46	0.55	0.57	0.58	0.50	0.56	0.55	0.57	0.51	0.18		
Fredericton	0.15	0.37	0.44	0.49	0.52	0.63	0.65	0.60	0.56	0.56	0.52	0.47	0.49	0.30		

	Victoria	Nanaimo	Agassiz	Battleford	Indian Head	Brandon	Winnipeg	Woodstock	Toronto	Lindsay	Gravenhurst	Kingston	Ottawa	Montreal	Quebec	Fredericton
Mean proportion for month (Constant sunshine being 1.)	0.49	0.47	0.37	0.47	0.35	0.55	0.60	0.42	0.45	0.42	0.53	0.50	0.51	0.56	0.41	0.45
Difference from average	0.07	—	0.07	0.01	0.11	0.09	0.07	0.02	0.02	0.02	—	0.03	0.02	0.05		0.01
Maximum daily amount	0.88	0.95	0.83	0.97	0.72	0.79	0.90	0.82	0.88	0.94	0.98	0.87	0.84	0.95	0.78	0.92
Date	11	26	11	13	14	8	16	6	2	4	2	10	6	28	6	6
No. of days completely clouded	4	5	6	2	5	2	1	7	4	3	3	3	3	6	7	4

Aurora recorded—

Where the class of aurora is noted by the observer, it is given (I) being the brightest, (IV) the feeblest in brilliancy.

2. Truro, IV; Haileybury, III.
12. Swift Current, II; Edmonton, II; Calgary, I, *very brilliant*; Truro, IV; Cape Magdalen, Foxleigh, Hillsdown, II; Threehills Creek, I; Estevan, I; Moose Jaw, Cranbrook.
13. Swift Current, IV; Edmonton, I; Coldwater, Morden, Bowsman, IV; Aweme, II; Foxleigh, Hillsdown, III; Threehills Creek, III; Estevan, IV; Moose Jaw, Barnardo.
14. Edmonton, III; Winnipeg, IV; Chicoutimi, Rat Portage, IV; Aweme, III; Gatesgarth.
16. Swift Current, IV.
17. Edmonton, IV; Aweme, IV.
18. Aweme, IV.
19. Winnipeg, I; Savanne.
20. Rat Portage, IV.
27. Estevan, III.

Thunder recorded on:—

1. Grenfell, Picton.
2. Qu'Appelle, Indian Head, Abernethy, Kneehill, Gatesgarth, Moose Jaw, Rapid City, Regina.
4. Qu'Appelle, Abernethy, Foxleigh.
5. Almasippi, Emerson, Oakbank, Rathwell.
6. Emerson, Quesnel, Haileybury.
7. Abitibi, Port Doyer, Cockburn Island.
8. Stony Creek, Port Doyer, Brantford, Agincourt, Emerson, Quesnel.
9. Galt.
10. Woodstock, Galt, Georgetown.
11. Scarboro'.
13. Port Stanley, Port Hope, Meaford, Bruce Mines, Paris, Point Clark, Brantford, Princeton, Georgetown, Emsdale.
14. Renfrew, Sutton, W., Westport, Smiths Falls.
15. Hamilton, Moose Jaw, Chaplin, Arden, Georgetown.
17. Nanaimo, Chilliwack, Nelson, Cranbrook.
19. North Gower, Smiths Falls.
20. Perce, Bowsman, Crescent Lake, Charlottetown, Barnardo.
21. Swift Current, Edmonton, Winnipeg, Quebec, Savanne, Brandon, Emerson, Bowsman, Oakbank, Hillyview, Aweme, Foxleigh, Hillsdown, Grenfell, Aurora, Crescent Lake, Jernyn, Rapid City, Lacombe, Beaver Hills, W., Shawinigan Falls, Haileybury.
22. Ottawa, Gravenhurst, London, Woodstock, Chicoutimi, N. Bruce, Rat Portage, Savanne, Point Clark, Brantford, Oakbank, Shawinigan Falls.
23. Saugeen, Parry Sound, Port Stanley, Toronto, Woodstock, Owen Sound, Sutton, W., Clinton, Galt, N. Bruce, Lucknow, Peterboro' Stony Creek, Hamilton, Port Doyer, Agincourt, Nelson, Tobacco Plains, Lindsay, Princeton, Arden, Scarboro', Uxbridge, Georgetown, Sunshine, Emsdale, Haileybury.
24. Perce, Owen Sound, Collingwood, N. Bruce, Kimmount, Point Escuminac, Westport, Aurora, Arden, Jernyn, Smiths Falls, Ursa.
25. Saugeen, Parry Sound, Kingston, Toronto, Gravenhurst, Deseronto, Brome, Owen Sound, Sutton, W., N. Gower, Bala, Orillia, N. Bruce, Kimmount, Peterboro', Clontarf, Meaford, Lakefield, Hamilton, Point Clark, Beatrice, Haliburton, Brantford, Agincourt, Lindsay, Westport, Uxbridge, Georgetown, Sunshine, Emsdale, Huntsville.
26. Parry Sound, Port Stanley, Minnedosa, Toronto, Gravenhurst, Deseronto, London, Woodstock, Brome, Port Hope, Owen Sound, Sutton, W., N. Gower, Vankleek Hill, Clinton, Galt, Bala, Collingwood, Orillia, N. Bruce, Lucknow, Peterboro', Clontarf, Meaford, Lakefield, Paris, Hamilton, Port Doyer, Point Clark, Birnam, Haliburton, Brantford, Agincourt, Almasippi, Treherne, Emerson, Oakbank, Westport, Westminster, Princeton, Midland, Aurora, Arden, Scarboro', Rapid City, Croydon, Wyoming, Georgetown, Emsdale, Rathwell.
27. Qu'Appelle, St. John, Deseronto, Moncton, Sussex, Port Hope, Sutton, W., Bruce Mines, Crescent Lake, Sydney, Charlottetown, Croydon, Sunshine.
28. Swift Current, Perce, Rat Portage, Savanne, Almasippi, Aweme, Threehills Creek, Crescent Lake, Gatesgarth, Rathwell, Rapid City, Beaver Hills, W.
29. Meaford, Treherne, Foxleigh, Gleichen, Threehills Creek, Kneehill.
30. Swift Current, Calgary, Perce, Cape Magdalene, Hillyview, Indian Head, Gleichen, Belmont.
31. Hedley, Princeton.

FORECASTS FOR MAY, 1904.

The forecasts issued by this office at 11 p.m. each night are posted up at every telegraph station in Canada, and are for 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 988. These were divided as follows:

District.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Percentage
Manitoba	87	68	14	5	86.2
Lake Superior	98	70	22	6	82.6
Lower Lake Region	102	81	13	8	85.8
Georgian Bay	103	79	14	10	83.5
Ottawa Valley	97	76	17	4	87.4
Upper St. Lawrence	97	76	14	7	85.6
Lower St. Lawrence	93	72	15	6	85.5
Gulf	97	71	17	9	81.9
Maritime Provinces, West.	107	90	16	1	91.6
Maritime Provinces, East.	107	84	14	9	85.0
Total	988	767	156	65	85.5

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,

Director.

Meteorological Office, Toronto,
27th June, 1904.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

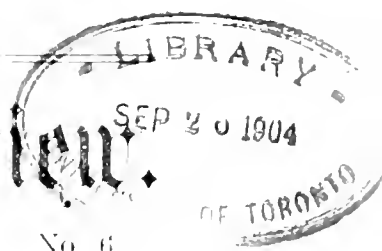
METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

JUNE, 1904.

No. 6.



INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

Over the lower mainland and islands of British Columbia the weather did not depart much from the normal, it was however, somewhat cooler than usual in most districts, more especially during the first half of the month. Bright sunshine was quite excessive, fine weather occurring from the 3rd to 6th, 12th to 16th and 24th to 30th. Over the upper mainland the conditions were similar to conditions further westward and the fine weather periods also occurred about the same dates. Light frosts were recorded at a few places early in the month, but little damage was caused thereby and the condition of vegetation on the 30th was normal.

The weather in the Northwest Territories was somewhat finer and cooler than usual and although there were exceedingly heavy rains at some places, the precipitation was below the average in most districts. Cool nights and warm days were features of the weather of the month, the range occasionally exceeding 40° at some places. After the 12th there was much fine bright weather and little rain was recorded excepting showers on or about the 25th and 27th which occurred at some places. Reports regarding the condition of vegetation were exceedingly favourable.

In Manitoba the weather was somewhat cool and in most localities the rainfall was excessive. Cloud and sunshine with occasional showers alternated frequently, but there was much bright weather during the second half of the month. Temperatures exceeding 90° were recorded on or about the 17th, 18th and 19th at many stations. Vegetation was in excellent condition on the 30th.

In Ontario the weather did not depart much from the normal, excepting in the amount of sunshine, which was considerably below the average, Ottawa only showing a slight difference to the contrary. There were also marked departures in the rainfall at a few stations. In most districts there was much dull weather, with occasional rain or thunderstorms during the first four or five days; also on or about the 8th, 9th, 21st, 25th, 29th and 30th. Comparatively low temperatures prevailed during the first ten days, after which, although the nights were mostly cool, between 80 and 85° was frequently recorded during the day. Vegetation made good progress and on the 31st was exceedingly luxuriant.

In the Province of Quebec the weather was warmer and drier than usual, but the departures from the normal were not very important excepting in eastern districts where the rainfall was exceedingly light. Most of the precipitation was recorded during the first week and last ten days, much bright sunshine occurring during the intervening period. On the 30th the condition of vegetation was below normal.

The weather conditions in New Brunswick was somewhat similar to conditions in Quebec, but the temperature in most districts on the contrary was slightly below the average. During the first week the sky was mostly overcast, rain occurring at many places on or about the 4th, 6th and 7th. After which, although rain was recorded occasionally and was heavy on or about the 23rd, there was much bright sunshine until the 26th, when rain was again recorded and the weather remained comparatively dull to the 30th. Owing to drought in many districts vegetation was somewhat backward.

In Nova Scotia the weather was exceedingly dry and in the vicinity of Pictou it was quite cool. In other portions of the province the temperature was almost normal, though slightly below at many places. Rain was frequently recorded in most districts from the 4th to 7th, and occasionally after the 18th, but the falls were generally light and at some stations they were almost completely absent. Sunshine and cloud alternated frequently, there being many short periods of exceedingly fine weather. Frosts occurred in some localities and together with the drought checked vegetation.

The weather in Prince Edward Island was similar to that in New Brunswick, it being mostly dry

and somewhat cool. From the 3rd to 6th, 9th to 11th, 14th to 18th, and 23rd to 26th there was much bright sunshine, the intervening periods being dull, and showers also occurring on eleven days at Charlottetown. Very light frosts were recorded at a few places, but not any damage was caused thereby and the condition of vegetation was normal.—F. F. PAYN.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for June exceeded the average throughout Canada, with the greatest departures over British Columbia, Alberta and the Maritime Provinces. The amount of the excess ranged from 0.02 of an inch at Southampton, Ont. and Prince Albert, N.W.T. to 0.17 of an inch at Barkerville, B.C.

HIGH AREAS.

A feature of the June high areas was their tendency to draw southward after reaching the Atlantic Coast. Nine areas were traced, few were pronounced, but many were widespread. The general path followed was from Washington Territory and British Columbia eastward to the New England Coast, and thence southward over or north of Bermuda. Moderate temperatures accompanied all of these systems.

LOW AREAS.

Twelve depressions were charted, the majority passing from British Columbia eastward across Manitoba and northern Ontario to the Gulf of St. Lawrence. They were for the most part of little energy and the greater number gradually became even less energetic as they progressed eastward. No general gales occurred and the local high winds reported were not very pronounced. There was a marked tendency for the areas to hover over the North West Territories and the Gulf of St. Lawrence.

WINDS.

In British Columbia, on Vancouver Island and over the mainland, the south and west directions largely prevailed with eleven days of strong and twelve of fresh breezes.

In the North West Territories the south and west directions also predominated with fifteen days of strong and twelve of fresh breezes and two gales.

In Manitoba the direction was more variable but slightly in favour of the south and west. On eighteen days the winds increased to strong and on six to fresh breezes.

In the Lake Region the direction was variable. On six occasions strong breezes were experienced and on eight fresh, at other times light to moderate winds prevailed.

In the Ottawa and Upper St. Lawrence Valleys the direction was likewise variable, fresh breezes obtaining on ten and strong on four days.

In the Lower St. Lawrence Valley and the Gulf the direction was largely variable with nine days of strong and fifteen of fresh breezes. On the 19th the force of a moderate gale was locally attained.

In the Maritime Provinces the south and west directions were the most general with strong breezes on two and fresh on sixteen days.

The moderate gale in the Gulf of St. Lawrence on the 19th was duly heralded by the display in that district of cautionary signals.

TEMPERATURE.

The mean temperature of June was average or very slightly below over the greater portion of Canada; in the more northern parts of Manitoba, Ontario and Quebec, however, it was very slightly above average. The temperature was fairly equable throughout the month; there were no periods of extreme heat, and on the other hand the cool periods, while tolerably pronounced, did not bring frost except very locally.

The highest and Lowest temperatures in each Province during June, 1904, were:

British Columbia,	99° .1 on 30th at Tobacco Plains,	25° .0 on 23rd at Big Creek.
N. W. Territories,	95° .0 on 18th at Crane Lake,	11° .0 on 14th at Macleod.
Manitoba,	95° .0 on 18th at Aweme,	29° .0 on 26th at Bowsman.
Ontario,	91° .0 on 25th at Chatham,	28° .0 on 22nd at Savanne.
Quebec,	88° .0 on 22nd at Chicoutimi,	32° .6 on 17th at Chicoutimi.
New Brunswick,	87° .0 on 16th at Dalhousie,	30° .5 on 19th at Moncton.
Nova Scotia,	86° .0 on 21st at Sydney,	27° .3 on 10th at Truro.
Prince Edward Island,	78° .6 on 24th at Charlottetown,	31° .6 on 10th at Charlottetown.

PRECIPITATION.

The rainfall was in excess of the average mean amount for June in the northern portions of Alberta and Saskatchewan and throughout Manitoba, also in the central and more northern counties of Ontario; in all other portions of the Dominion there was a deficiency. The deficiency was most marked in Ontario, near Lake Erie, and in the extreme eastern and extreme western portions of the Maritime Provinces where in many localities the fall was scarcely equal to half the average. In Quebec in general it was about two-thirds of the average, and the same may be said of Assiniboia and Southern Alberta.

BRIGHT SUNSHINE.

The mean proportion of Bright Sunshine for June was in excess of the average from British Columbia to Western Manitoba and also in Eastern Ontario and Quebec, elsewhere the amount recorded was subnormal. The extremes of departure from average were 43 per cent at Victoria, B.C. and 14 per cent at Winnipeg, Man.

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, JUNE, 1901.

[illegible]

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, JUNE, 1901.

* Stations not furnished with Registering Thermometers.

[illegible]

PRECIPITATION AT STATIONS REPORTING RAIN, WEATHER, &c., DURING
JUNE, 1904.

STATION	RAIN FALL					REMARKS
	Amount in inches	No. of Days, 90. or Over	No. of Fair Days	Heaviest Fall in Month	Date	
BRITISH COLUMBIA						
	in.			in.		
Royal Oak	1.32	4	26	0.55	17	
Goldstream Lake	1.35	11	19	0.47	2	
Nanaimo	0.94	6	21	0.50	9	
Copnut mt.	2.90	3	27	1.37	18	
Sooke Lake	1.28	4	26	0.52	2	
Port Eslington	7.41	27	3	1.94	25	
Nanai Harbour	4.35	18	12	1.00	24	
N. W. TERRITORIES						
Saltwats	2.70	1	24	2.35	10	
Coates	1.00	2	27	1.00	4	Very dry month.
Regina	1.76	11	16	0.94	2	Thunder, 9, 18, 27, 28.
Dirt Hills	5.23	8	22	0.70	2	
Arlington Beach	1.90	5	27	0.92	2	Fine growing weather.
Brouderham	5.26	11	16	2.90	10	Thunder, 10, 16, 17, 30.
Weyburn	3.27	10	20	0.79	1	
Imperial	3.51	15	15	1.50	1	
Leopold	2.78	11	19	0.91	3	Thunder, 15, 21.
Beaver Hills, E.	2.91	9	21	1.66	11	Thunder, 17, 21. Light frost, 8th.
Stirling	1.26	1	24	0.64	2	
MANITOBA						
Rathwell	8.15	13	14	2.61	3	Thunder, 9, 15, 17, 19, 22, 23, 24, 29.
Orkna	7.69	11	18	2.05	4	Thunder, 16, 19, 22.
Behnent	5.24	13	17	1.76	10	Thunder, 9, 11, 15, 16, 17, 19, 22, 24.
Norway	4.91	13	16	0.81	4	Thunder, 9, 11, 16, 18, 20, 23, 24, 28, 29, 30.
Rapid City	1.91	10	9	1.61	10	Thunder, 11, 16, 17, 22, 27, 28, 29.
Roschank	7.29	11	19	3.16	34	Thunder, 16th.
Beaver	4.13	9	21	2.47	34	
Delongme	1.11	10	20	0.35	3	Thunder, 15, 19.
Carlwright	6.76	11	19	1.52	34	
Orkdale Park	2.17	10	20	1.90	11	
ONTARIO						
Oliver's Ferry	1.00	11	19	1.65	12	
Parna	3.41	10	20	1.35	1	
Croydon	3.17	5	25	1.50	1	Thunder, 20th.
Arden	3.56	13	17	0.82	1	Thunder, 6, 15, 21, 22, 26, 30.
Georgetown	3.24	10	18	1.31	1	Thunder, 4, 5, 20, 21, 29, 30.
Jermyn	3.61	10	20	0.94	1	Thunder, 1, 22, 25, 28, 30.
Smith's Falls	4.19	7	23	1.90	3	Thunder, 5, 11, 15, 22, 25.
Lansdowne	2.67	5	25	1.18	1	
Sunshine	2.73	12	18	0.81	1	Thunder, 22, 28, 30.
Thursmore	2.68	6	24	1.10	9	Thunder, 21.
Mallard	3.10	11	19	0.90	8	Thunder, 8, 13, 29.
Bratton	0.98	5	25	0.42	1	
Wes'tminster	0.55	6	24	0.20	1	
Warton	2.68	8	22	0.84	1	Thunder, 30th.
Huntsville	2.62	8	22	0.61	25	Thunder, 20, 29, 30.
Princeton	3.10	8	22	1.04	30	Thunder, 5, 21.
Westport	1.23	8	22	0.45	21	
Westport	3.56	11	19	1.75	1	Thunder, 5, 15, 16, 20, 21, 24, 27, 28.
Aurore	2.11	9	21	0.65	8	Thunder, 14, 20.
Montague	4.04	8	22	1.13	1	Thunder, 21.
Sydenham	3.05	5	25	2.00	1	
Corn	2.23	11	19	0.18	1	Thunder, 1, 5, 8, 14, 21, 27, 29.
Leon's Head	2.92	8	22	1.11	4	Thunder, 10th.
Scarbore	2.39	10	20	0.51	1	Thunder, 1, 21, 29, 30.
Wyoming	3.00	8	22	0.55	30	Thunder, 1, 20, 21, 29, 30.
Deer Park	2.07	7	25	0.18	1	
Watford	2.19	9	21	0.62	30	
Godwinch	2.36	7	23	1.00	1	
Wooder	3.11	6	24	1.29	8	Thunder, 15, 30.
Exbridge	3.91	11	19	1.31	8	Thunder, 5, 21.
Orangeville	1.06	11	19	1.06	1	
Emdale	1.54	12	18	0.98	29	Thunder, 1, 5, 6, 11, 21, 24, 29, 30.
Niagara Falls	1.11	5	25	0.60	1	
N. Williamsburg	1.02	5	26	3.55	7-8	
NEW BRUNSWICK						
Point L. Martin	0.12	7	23	0.15	5	
NOVA SCOTIA						
Port Mowbray	0.12	3	25	0.23	2	

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF JUNE, 1904.

	Hours Ending															
	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.
Victoria	0.00	0.20	0.32	0.48	0.65	0.69	0.67	0.75	0.77	0.77	0.71	0.70	0.67	0.64	0.44	0.00
Nanaimo	0.21	0.41	0.52	0.58	0.72	0.54	0.53	0.48	0.54	0.49	0.57	0.62	0.49	0.46	0.34	0.08
Agassiz	0.00	0.00	0.15	0.58	0.40	0.54	0.58	0.53	0.65	0.57	0.49	0.43	0.52	0.42	0.26	0.00
Battleford	0.52	0.60	0.55	0.59	0.61	0.64	0.60	0.59	0.57	0.54	0.40	0.44	0.42	0.38	0.06	
Indian Head	0.01	0.28	0.46	0.54	0.46	0.54	0.65	0.62	0.65	0.62	0.61	0.61	0.55	0.54	0.51	0.00
Brandon	0.00	0.00	0.40	0.64	0.71	0.69	0.68	0.61	0.68	0.67	0.67	0.72	0.63	0.60	0.48	0.00
Winnipeg	0.10	0.37	0.46	0.54	0.54	0.59	0.60	0.46	0.57	0.54	0.52	0.50	0.46	0.41	0.39	0.05
Woodstock	0.03	0.23	0.45	0.46	0.49	0.59	0.55	0.60	0.65	0.66	0.68	0.64	0.57	0.53	0.27	0.00
Toronto	0.00	0.19	0.51	0.60	0.60	0.61	0.65	0.65	0.61	0.67	0.66	0.67	0.64	0.54	0.38	0.01
Lindsay	0.02	0.22	0.36	0.52	0.60	0.58	0.60	0.57	0.57	0.49	0.40	0.55	0.38	0.39	0.38	0.48
Gravenhurst	0.00	0.18	0.57	0.63	0.66	0.68	0.73	0.67	0.70	0.65	0.60	0.59	0.64	0.54	0.00	0.00
Barrie																
Kingston	0.31	0.50	0.57	0.60	0.65	0.69	0.75	0.78	0.75	0.66	0.62	0.43	0.36	0.28	0.05	0.00
Ottawa	0.00	0.19	0.47	0.55	0.58	0.57	0.68	0.70	0.70	0.65	0.64	0.64	0.61	0.55	0.33	0.00
Montreal	0.00	0.25	0.53	0.54	0.62	0.61	0.64	0.66	0.72	0.74	0.74	0.71	0.69	0.64	0.49	0.00
Quebec	0.00	0.30	0.54	0.53	0.59	0.56	0.62	0.66	0.61	0.62	0.61	0.61	0.62	0.61	0.42	0.00
Fredericton	0.32	0.50	0.58	0.54	0.53	0.52	0.55	0.63	0.56	0.49	0.59	0.58	0.56	0.48	0.44	0.00

	Victoria	Nanaimo	Agassiz	Battleford	Indian Head	Brandon	Winnipeg	Woodstock	Toronto	Lindsay	Barrie	Gravenhurst	Kingston	Ottawa	Montreal	Quebec	Fredericton
Mean proportion for month (Constant sunshine being 1.)	0.55	0.49	0.38	0.52	0.45	0.50	0.44	0.44	0.54	0.44		0.57	0.52	0.51	0.60	0.49	0.49
Difference from average	0.13		-0.06	0.00	-0.03	-0.03	0.11	0.08	0.06	0.10			0.01	0.03	0.06		0.03
Maximum daily amount	0.87	0.66	0.78	0.98	0.85	0.80	0.91	0.88	0.88	0.96		0.96	0.93	0.85	0.96	0.87	0.92
Date	11-28	29-12-24	8	22	16	7	11	26	23			27	19	28	18	8	28
No. of days completely clouded	4	4	5	6	5	3	5	6	3	5		4	4	3	3	5	5

Thunder recorded on :—

2. Lucknow.
3. Lucknow, Agincourt, North Bruce.
4. Kingston, Parry Sound, Georgetown, Jernyn, Warton, Ursa, Lion's Head, Scarboro', Emsdale, Beatrice, Otonabee, Port Burwell, Bala, Galt, Peterboro', Port Hope, Cockburn Island, Kimmount, Meaford, Bruce Mines, Birnam, Haliburton, Quesnel, Gravenhurst, Deseronto, London, Lindsay, North Bruce.
5. Parry Sound, Banff, Smith's Falls, Westport, Ursa, Emsdale, Bronte, Meaford, Bruce Mines, Hillsdown, Bon Accord, Wetaskiwin, Hedley, Nelson, Princeton, Gravenhurst, Owen Sound.
6. Parry Sound, Swift Current, Edmonton, Arden, Uxbridge, Emsdale, Bronte, Shawinigan Falls, Bala, Quesnel, Gravenhurst.
7. Battleford, Swift Current, Shawinigan Falls, Grenfell, Dawson.
8. Midland, Ursa, Beatrice, Bala, Kimmount, Meaford, Gravenhurst.
9. Parry Sound, Battleford, Edmonton, Banff, Rathwell, Belmont, Norquay, Regina, Arden, Bala, Galt, Almasippi, St. Albans, Bon Accord, Wetaskiwin, Nelson, N. Nicomen, Deseronto.
10. Battleford, Qu'Appelle, Bruderheim, Moose Jaw, Indian Head, Foxleigh, Regina, Abernethy, Gatesgarth, Hillview, Bowsman, Bon Accord, Threehills Creek, Grenfell, Barnardo, Lloydminster, Athabasca Landing.
11. Minnedosa, Belmont, Norquay, Rapid City, Hillview, Bowsman.
12. Threehills Creek.
13. Port Stanley, Edmonton, Meaford, Birnam, Haliburton, Gravenhurst.
14. White River, Midland, Aurora, Ursa, Emsdale, Beatrice, Otonabee, Birnam, Chicoutimi, Bala, Galt, Clontarf, Cockburn Island, Kimmount, Agincourt, Hillsdown, Bon Accord, Gravenhurst, Lindsay.
15. Rathwell, Belmont, Deloraine, Lacombe, Arden, Smith's Falls, Westport, Wooler, Sutton W., Foxleigh, Hillview, Brandon, St. Albans, Treherne, Bon Accord, Deseronto, Halifax, Haileybury.
16. Father Point, Barkerville, Edmonton, Gretna, Belmont, Norquay, Rapid City, Rosebank, Oakdale Park, Bruderheim, Westport, Parrsboro', Savanne, Foxleigh, Hillview, Almasippi, Treherne, Bon Accord, Quesnel, Pietou, Athabasca Landing.
17. Port Arthur, Minnedosa, Winnipeg, Rathwell, Belmont, Rapid City, Bruderheim, E. Beaver Hills, Morden, Almasippi, Bon Accord, Wetaskiwin, Cranbrook, Pietou, Barnardo, Lloydminster.
18. Parry Sound, Battleford, Qu'Appelle, Swift Current, Medicine Hat, Prince Albert, Edmonton, Norquay, Regina, Moose Jaw, Sussex, Moncton, Gleichen, Estevan, Threehills Creek, Nelson, Pietou, Truro, St. John.
19. Prince Albert, Winnipeg, Rathwell, Gretna, Belmont, Deloraine, Oakdale Park.
20. Norquay, Croydon, Westport, Aurora, Wyoming, Bronte, N. Gower, Otonabee, Galt, Quesnel, Uplands.
21. Ottawa, Saugeen, Father Point, Barkerville, Edmonton, Lacombe, E. Beaver Hills, Barnardo, Arden, Georgetown, Ennismore, Warton, Westport, Montague, Ursa, Scarboro', Wyoming, Uxbridge, Parrsboro, Shawinigan Falls, Otonabee, Sutton, W. Galt, Stony Creek, Peterboro', Welland, Clontarf, Port Hope, Meaford, Bruce Mines, Birnam, Agincourt, Point Clark, Hillsdown, Bon Accord, Threehills Creek, Truro, Quebec, St. John, Lindsay, Haileybury, Owen Sound.
22. Kingston, Battleford, Prince Albert, Minnedosa, Rathwell, Gretna, Belmont, Rapid City, Arden, Jernyn, Smith's Falls, Sunshine, St. Stephen, Chicoutimi, Sutton W., Rat Portage, Morden, St. Albans, Oakbank, Bowsman, Gleichen, N. Nicomen, Stony Mountain, Deseronto, Chilliwack, Grand Manan, Wolfville.
23. Battleford, Winnipeg, Rathwell, Norquay, Meaford, Haliburton, Wolfville.
24. Saugeen, Battleford, Rathwell, Norquay, Huntsville, Westport, Emsdale, Beatrice, Port Doyer, Welland, Clontarf, Meaford, Point Clark, Foxleigh, Almasippi, Gravenhurst, Uplands.
25. Kingston, Ottawa, Parry Sound, Yarmouth, Jernyn, Smith's Falls, Sunshine, Westport, Quebec, Emsdale, Bronte, Beatrice, N. Gower, Bala, Birnam, Threehills Creek, Gravenhurst, Lindsay, Uplands.
26. Parry Sound, Arden, Gatesgarth, Bon Accord.
27. Battleford, Qu'Appelle, Medicine Hat, Minnedosa, Winnipeg, Edmonton, Rathwell, Rapid City, Regina, Westport, Ursa, Rat Portage, Hillview, Treherne, Bon Accord, Barnardo.
28. Qu'Appelle, Minnedosa, Winnipeg, Norquay, Rapid City, Regina, Jernyn, Westport, Port Doyer, Foxleigh, Abernethy, Treherne, Grenfell, Lloydminster, Owen Sound.

29. Port Arthur, Saugeen, Prince Albert, Rathwell, Belmont, Norquay, Rapid City, Georgetown, Midland, Ursa, Scarboro', Wyoming, Emsdale, Beatrice, Port Doyer, Otonabee, Clinton, Bala, Galt, Stony Creek, Peterboro', Lucknow, Rat Portage, Port Hope, Kimmount, Meaford, Birnam, Agincourt, Brantford, Point Clark, St. Albans, Oakbank, Treherne, Owen Sound.

30. Port Stanley, Parry Sound, Father Point, Banff, Norquay, Brudenheim, Arden, Georgetown, Jermyn, Sunshine, Westminster, Warton, Scarboro', Wyoming, Wooler, Emsdale, Brombe, Beatrice, Port Doyer, Otonabee, Sutton W., Port Burwell, Clinton, Bala, Galt, Peterboro', Lucknow, Welland, Clontarf, Port Hope, Meaford, Birnam, Brantford, Haliburton, Bon Accord, Gleichen, Threchills Creek, Knee Hill, Wetaskiwin, Quesnel, Gravenhurst, Guelph, Quebec, Lindsay, Owen Sound, Athabasca Landing.

Aurora recorded:—

Where the class of aurora is noted by the observer, it is given, I being the brightest, (IV) the feeblest in brilliancy.

9. Georgetown, IV; Bruce Mines, IV; Haileybury, IV.

10. Cartwright.

11. Haileybury, III.

14. Estevan.

15. Halifax, IV; Quebec, II; Parry Sound, IV; Swift Current, IV; Winnipeg, III; Georgetown, IV; Huntsville, III; Sydney, I; Indian Head, II; Beatrice, III; Collingwood, *very bright*, Savanne, St. Albans, I; Cartwright, I; Haileybury, III.

16. Qu'Appelle, IV; Georgetown, IV; Lucknow, IV; Rat Portage, IV; Quebec, III; Haileybury, III.

17. Rat Portage, III; St. Albans, IV; Estevan, Barnardo; Haileybury, IV.

18. Estevan, Threchills Creek, IV.

26. Rat Portage, IV; St. Albans, III; Oakbank.

FORECAST FOR JUNE, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1019. These was divided as follows:—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Per- centage
Manitoba	79	65	12	2	80.9
Lake Superior	96	71	17	11	80.3
Lower Lake Region	120	101	16	3	90.8
Georgian Bay.	119	99	17	3	90.3
Ottawa Valley.	100	83	11	6	88.5
Upper St. Lawrence	100	82	13	5	88.5
Lower St. Lawrence	99	73	19	7	83.3
Gulf.	100	80	17	3	88.5
Maritime Provinces, West	101	75	23		85
Maritime Provinces, East.	102	77	1		84.8
Total	1019	806	161	49	87

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions, the number partly verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto.

26th July, 1904.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

JULY, 1904.

No. 7.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather in British Columbia did not depart much from the normal excepting at a few places, it was however somewhat wet and cool in the northern portion, and comparatively dry and warm in southern districts. Over the lower mainland and islands it was mostly fine and warm with much bright sunshine during the first ten days, also from the 18th to 26th and last two days, rain occurring at most places during the intervening periods. Vegetation was somewhat backward on the 31st in this portion of the Province. Over the Upper Mainland the dates of precipitation varied with the district excepting about the 7th and 8th, and 15th to 18th when rain was recorded in most districts. In Kootenay there was also rain about the 12th and 28th. The temperature exceeded 90° upon several occasions during the month in the southern portion. On high lands light frosts were recorded at several stations but little damage was caused thereby and vegetation was in excellent condition on the 31st.

In the North-west Territories, although the day temperatures were exceedingly high on many days, the nights were cool; and although it was generally cooler in the north and warmer in the south than usual, the departures from the normal were not important. In most localities there was much bright sunshine more especially from the 1st to 12th and 18th to 28th. Showers were somewhat frequent and in the eastern portion of the Territories there was a good supply of rain, whilst in more western districts the precipitation was comparatively light. Vegetation made good progress and growth was abnormal.

The weather in Manitoba was almost uniformly cool and although the rainfall was quite light at some places, it was excessive in most localities. Although cloudy weather and showers were frequent and varied considerably with the district a slight excess of bright sunshine was general and there were many exceedingly fine days. Light frosts occurred at a few places, but little damage was caused to vegetation, the growth of which was normal.

The weather in Ontario was characterised by somewhat low temperature in most districts and much cloudiness; there was also much rain in many districts. In a few portions of the Province the weather, on the contrary, was unusually dry. Showers were frequent during the first ten or twelve days; also on or about the 23rd, 27th and 31st, the intervening periods being fine in most localities. From the first to the third day of the month night temperatures of or near 35° were recorded at many places and cool nights prevailed throughout the greater part of the month. On or about the 17th and 18th the temperature exceeded 90° at many stations and in southwestern counties this hot weather continued for several days. Reports regarding the condition of vegetation received from the various observers were generally favourable.

In the Province of Quebec east of Montreal the weather in most districts was warmer than usual, high temperatures occurring frequently after the first week, and the nights being comparatively warm. In most localities showers were frequent, but the dates of occurrence and quantity varied considerably. It was quite light in the extreme western portion, also at many places in eastern counties, whilst at some stations it was excessive. Dull cloudy weather was also somewhat frequent and vegetation generally was backward.

The weather in New Brunswick was mostly fair and dry and unusually warm, excepting in districts contiguous to the Bay of Fundy where it was somewhat dull and wet, fogs being also of frequent occurrence. Temperatures exceeding 80° were frequent and the nights were comparatively warm. Vegetation was below its normal condition at this time of the year.

In Nova Scotia the weather was exceedingly warm and dry, and in most places along the coast fogs occurred on many days. Inland however there were many fine bright days although the sunshine was generally deficient. The condition of vegetation was slightly backward.

The weather in Prince Edward Island was unusually warm and dry and with the exception of fine clear weather from the 4th to 15th and on a few days after the latter date it was mostly dull and cloudy. Heavy rain occurred about the 4th, 14th and 24th and there were light showers on or about the 1st, 2nd, 25th and 30th. Owing to drought vegetation was somewhat backward. F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for July was below normal over Southern British Columbia, the greater portion of the North-west Territories, Manitoba, New Ontario, and Western Quebec; elsewhere the normal value was reached or exceeded. The extremes of departure from normal were -0.10 of an inch at Prince Albert, N.W.T., and -0.06 of an inch at Barkerville, B.C., Charlottetown, P.E.I., and Yarmouth, N.S.

HIGH AREAS.

The systems of high barometric pressure which traversed the Continent during July were, for the most part, of slight intensity, although a few exhibited a greater amount of energy than the usual seasonal type.

Eight areas were traced, the majority being in evidence during the latter half of the month. The general path assumed was from the North Pacific States and British Columbia across the Lake Region to the Atlantic.

LOW AREAS.

Twelve areas of low barometric pressure were chartered during July, the majority being of the transcontinental type, and followed an irregular course from the Pacific to the Atlantic between the 45th and 55th parallels of North Latitude.

Many of the systems exhibited much energy while over Western Canada, but in all cases became less pronounced as they progressed eastward. Two gales were recorded over the Territories and Manitoba, but elsewhere the accompanying winds did not exceed strong breezes.

A pronounced heat wave swept over the country between the 14th and 21st and some extremely high temperatures were recorded. Temperatures were also locally extreme on several days in the North-west Territories.

WINDS.

In Vancouver Island and over the mainland of British Columbia the south and west directions predominated with eight days of strong and twelve of fresh breezes.

In the North-west Territories the south and west directions were most in evidence. There were six days with strong and fourteen with fresh breezes, and on one occasion the force of a gale was generally recorded.

In Manitoba the direction was chiefly between the south and west with eleven days of strong and ten of fresh breezes, as well as two moderate gales.

In the Lake Region the direction was largely variable, but favouring somewhat the south and west. Light to moderate winds prevailed, there being only four days with strong and four with fresh breezes.

In the Ottawa and Upper St. Lawrence Valleys the south and west directions were the most general with two days of strong and eight of fresh breezes.

In the Lower St. Lawrence Valley and the Gulf the direction was chiefly southerly to westerly with six days of strong and thirteen of fresh breezes.

In the Maritime Provinces the direction was almost entirely southerly to westerly with two days of strong and ten of fresh breezes.

No gales occurred over the districts where storm signals are displayed and no storm warnings were issued.

TEMPERATURE.

The temperature was above the average throughout the Maritime Provinces, likewise in Quebec, except in the extreme western portion. It was average or a little above from the Okanagan Valley in British Columbia eastward to Western Assiniboia, embracing Southern Alberta. Elsewhere in the Dominion the average was not maintained, the negative departures differing little, and the general deficiency being from 1° to 3°. The chief positive departures occurred in the eastern parts of Quebec and the Maritime Provinces and amounted to from 3° to 5°.

The highest and Lowest temperatures in each Province during July, 1904, were :

British Columbia,	103° 50 on 26th at Enderby,	23° 57 on 14th at Stuart's Lake,
N. W. Territories,	102° 53 on 23rd at Lethbridge,	30° 50 on 17th at Kneehill,
Manitoba,	89° 55 on 17th at Aweme,	32° 50 on 6th at Barnardo,
Ontario,	98° 50 on 16th at Point Clark,	30° 50 on 23rd at Savanne,
Quebec,	93° 56 on 20th at Chicoutimi,	37° 50 on 2nd at Abitibi,
New Brunswick,	91° 50 on 19th at Chatham,	41° 55 on 4th at Sussex,
Nova Scotia,	92° 58 on 27th at Truro,	35° 53 on 4th at Truro,
Prince Edward Island,	85° 56 on 27th at Charlottetown,	47° 57 on 9th at Charlottetown,

PRECIPITATION.

The rainfall was above the average over the eastern portion of the Northwest Territories and in Manitoba, also in Ontario east of Lake Huron, north to the Nipissing District and east to an imaginary line drawn north and south from the eastern end of Lake Ontario. In all the remaining portions of the Dominion the average was not maintained, if we except one or two isolated cases, such as St. John, N.B., and Victoria, B.C., where it was four-tenths of an inch and one-tenth of an inch above the average respectively. Welland recorded the highest rainfall for the month, 5.90 inches, this being 2.94 inches in excess of the average; Winnipeg and Toronto closely followed with 5.55 inches and 5.15 inches, these quantities being 2.52 inches and 2.20 inches respectively above the average amount. Halifax was 1.60 inches below average; Truro, 1.97 inches; Montreal, 1.21 inches; Calgary, 1.20 inches; Charlottetown, 1.40 inches and Fredericton, 2.15 inches below.

BRIGHT SUNSHINE.

From British Columbia to Manitoba inclusive, an excess of the average amount of bright sunshine was recorded in July. Over all other parts of Canada the normal value was not reached. The extremes of departure from normal were +8% at Battleford, N.W.T., and -8% at Kingston, Ont.

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, JULY, 1901

temperature not reduced to sea level. Stationary not furnished with Kolliding thermometer.

[illegible]

N.W. TERRITORIES—Cont.									
Chaplin	31	10 11 35	1512	29 31	30 36 29	37 0 49	38 3	3 5	9 87 6
Moose Jaw	50	27 106 10	2202				61 7	2 2	10 85 0
Regina	50	27 105 35	1745				61 7	2 2	10 85 0
Indian Head	50	27 101 37	1885				62 1	2 2	10 85 0
Cunningham Manor	50	28 103 16	1921				62 1	2 2	10 85 0
Macleod	49	13 102 22	2061				63 9	8 96 0	8 96 0
Gatesgarth (Pense)	50	26 105 0	1870				62 2	9 97 0	9 97 0
Pinehill Creek	50	23 102 33	3730				60 6	4 90 0	4 90 0
Griffith	50	23 102 33					60 6	4 90 0	4 90 0
Kneehill	51	55 113 17					58 1	2 91 7	2 91 7
Muskowpetung	50	52 101 30							
Fort Simpson	49	52 121 13	1892						
Alameda	49	15 102 17							
Gray Hill	52	15 113 30	2750				61 3	3 90 1	3 90 1
Saskatoon	52	15 106 30	1571				60 5	1 97 0	1 97 0
Crane Lake	50	0 109 30	2505				60 6	5 97 0	5 97 0
Moosemoun	50	0 107 37	1881				60 6	5 97 0	5 97 0
Albion Landing	51	13 113 17	1650				60 6	5 97 0	5 97 0
Calgary (Ex-Station)	50	59 102 25	1858				63 1	3 91 0	3 91 0
Crescent Lake	49	12 103 1					67 1	3 91 0	3 91 0
Estevan	49	12 103 1					67 1	3 91 0	3 91 0
Lehighbridge	49	12 103 1					67 1	3 91 0	3 91 0
Deer Lake	49	12 112 31					61 1	1 91 0	1 91 0
Red Lake	52	28 105 30					61 1	1 91 0	1 91 0
Wetaskiwin	53	10 111 30					60 3	3 90 1	3 90 1
Ben Accord	51	5 113 22					60 3	3 90 1	3 90 1
Threehills Creek	51	5 113 22					60 3	3 90 1	3 90 1
Gleichen	50	52 112 31					61 3	3 90 1	3 90 1
New Hope	50	55 113 33					61 3	3 90 1	3 90 1
High River	50	55 113 33					61 3	3 90 1	3 90 1
Onion Lake	49	12 113 18					61 3	3 90 1	3 90 1
Stoughton	49	12 113 18					61 3	3 90 1	3 90 1
Cardston	49	12 113 18					61 3	3 90 1	3 90 1
Foxleigh	49	12 113 18					61 3	3 90 1	3 90 1
Hilldown	49	12 113 18					61 3	3 90 1	3 90 1
Lloydminster	49	12 113 18					61 3	3 90 1	3 90 1
Albermarle	49	12 113 18					61 3	3 90 1	3 90 1
St. Peters	49	12 113 18					61 3	3 90 1	3 90 1
MANITOBA									
Winnipeg	49	95 7	700				63 3	3 90 1	3 90 1
Minnetonka	49	15 99 30	1680				63 3	3 90 1	3 90 1
Fort Osborne	49	15 99 30					63 3	3 90 1	3 90 1
Brandon	49	15 99 30					63 3	3 90 1	3 90 1
Chancellor Island	49	15 99 30					63 3	3 90 1	3 90 1
Stony Mountain	49	15 99 30					63 3	3 90 1	3 90 1
Bartholomew	49	15 99 30					63 3	3 90 1	3 90 1
Fredericton	49	15 99 30					63 3	3 90 1	3 90 1
Hillview	49	15 99 30					63 3	3 90 1	3 90 1
Minneapolis	49	15 99 30					63 3	3 90 1	3 90 1
Pipestone	49	15 99 30					63 3	3 90 1	3 90 1
Boxholm	49	15 99 30					63 3	3 90 1	3 90 1
Oakbank	49	15 99 30					63 3	3 90 1	3 90 1
Portage la Prairie	49	15 99 30					63 3	3 90 1	3 90 1
Penelope Crossing	49	15 99 30					63 3	3 90 1	3 90 1
Dauphin	49	15 99 30					63 3	3 90 1	3 90 1
Elkhorn	49	15 99 30					63 3	3 90 1	3 90 1
Emerson	49	15 99 30					63 3	3 90 1	3 90 1
Carlton Place	49	15 99 30					63 3	3 90 1	3 90 1
Morden	49	15 99 30					63 3	3 90 1	3 90 1
Birdie	49	15 99 30					63 3	3 90 1	3 90 1
Carman	49	15 99 30					63 3	3 90 1	3 90 1
Pearson	49	15 99 30					63 3	3 90 1	3 90 1
Virden	49	15 99 30					63 3	3 90 1	3 90 1
Carleton Place	49	15 99 30					63 3	3 90 1	3 90 1
ONTARIO									
Halifax	49	79 30	657				61 3	3 90 1	3 90 1
Sudbury	49	79 30	800				61 3	3 90 1	3 90 1
Bayview	49	79 30	100				61 3	3 90 1	3 90 1
Chatham	49	79 30	100				61 3	3 90 1	3 90 1
Brantford	49	79 30	100				61 3	3 90 1	3 90 1

Orilla	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Saugon	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Windsor	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																																																																				

PRECIPITATION AT STATIONS REPORTING RAIN, WEATHER, &c., DURING
JULY, 1904.

RAIN FALL						
STATION	Amount in inches	No. of Days, 91. or Over	No. of Fair Days	Heaviest Fall in Month	Date	REMARKS
BRITISH COLUMBIA—	in.			in.		
Sooke Lake	1.91	6	25	1.12	17	
Nasas Harbour	3.20	11	20	0.73	29	
Nanaimo	0.96	2	29	0.66	16	
Royal Oak	0.71	1	27	0.39	14	
Goldstream Lake	1.71	5	26	0.74	17	
Port Essington	5.56	21	10	1.04	29	Much cold weather evening and morning.
Cocquitham	2.24	7	24	1.23	16-17	
N. W. TERRITORIES						
Beaver Hills, W.	2.37	10	21	1.29	28	Thunder, 5, 6, 9, 12, 18, 27, 28.
Lacombe	1.86	4	27	0.65	13	Thunder, 6, 13.
Stirling	0.34	3	28	0.28	29	
Dart Hills	3.22	4	27	1.55	13	
Loom Creek	2.60	9	22	1.20	30	
Imusfall	1.46	5	26	1.23	29	Thunder, 29th.
Bruderheim	0.87	7	24	0.27	28	Thunder, 6, 9, 12, 28.
Coutts	0.00	0	31			Very hot and dry.
Regina	1.71	9	20	0.77	12	Thunder, 12, 24, 28.
Weyburn	0.86	7	24	0.12	12	Thunder, 10, 12.
Victoria	1.97	7	24	0.87	17	Thunder, 6.
Beaver Hills, E.	0.66	2	29	0.63	18	Thunder, 19, 17, 28.
MANITOBA						
Belmont	1.20	8	23	1.76	14	Thunder, 10, 13, 17, 29.
Rathwell	2.38	11	18	1.15	17	Thunder, 2, 10, 13, 17, 18, 19, 20. Haying, 20.
Gretna	5.41	11	19	3.75	2-3	Thunder, 2, 16, 17.
Beaver	5.11	11	20	0.95	2	Wheat heading, 8th.
Oakdale Park	2.39	7	24	1.26	14	Thunder, 13, 13, 16.
Cartwright	5.08	9	22	0.94	17	Thunder, 19, 13. 17th, Cyclonic storm.
Rosbank	1.04	7	24	1.72	2	Thunder, 2.
Rapid City	3.46	10	17	1.12	26	Thunder, 3, 10, 13, 18, 29.
Norquay	3.10	9	22	1.01	18	Thunder, 14, 29.
Delordine	1.25	6	25	0.51	13	Thunder, 17, 18, 29.
ONTARIO—						
Montagu	3.92	10	21	1.39	9	Thunder, 5, 25, 25 in shade.
Emisdale	3.19	13	18	0.64	31	Thunder, 9, 12, 15, 17, 27, 31.
Lyndridge	3.63	11	20	0.93	9	Thunder, 9, 27.
Wyoming	1.25	7	24	1.75	28	Thunder, 4, 9, 11, 17, 18, 19, 22, 23, 27, 28.
Sunshine	3.72	11	20	1.10	12	Thunder, 1, 5, 9, 12, 28.
Croydon	2.62	8	23	0.99	9	Thunder, 5, 12, 29.
Smith's Falls	3.61	9	22	0.97	9	Thunder, 1, 19, 13, 31.
Wooler	3.66	8	23	0.84	12	Thunder, 4, 9, 12, 19, 31.
Huntsville	2.39	6	25	0.95	27	Thunder, 9, 27, 31.
Princeton	1.23	8	23	1.17	28	Thunder, 6, 9, 12.
Watford	1.19	7	24	1.18	27	
Parma	2.68	10	21	0.67	10	
Aurora	3.31	9	22	1.18	9	Thunder, 11, 27, 28.
N. Williamsburg	1.79	6	22	0.68	31	
Lansdowne	2.88	9	22	0.70	21	Thunder, 9, 12, 18.
Sydenham	3.63	8	23	1.10	9	
Arden	3.62	13	18	0.67	2	Thunder, 2, 5, 10, 12, 13, 18, 19.
Goderich	2.57	9	22	0.70	12	
Oliver's Ferry	2.56	11	20	0.32	31	
Scarboro	3.92	11	23	0.70	23	Thunder, 1, 4, 9, 12, 19, 20, 27, 31.
Emmimore	2.82	8	23	1.15	11	Thunder, 1.
Georgetown	3.93	12	18	0.87	12	Thunder, 1, 1, 9, 12, 15, 27, 28, 31.
Lion's Head	1.71	6	23	0.57	15	Thunder, 15, 28.
Westport	6.86	14	17	1.70	6	Thunder, 1, 2, 17, 19, 21, 27, 28.
Dutton	3.94	1	27	1.30	9	
Warton	2.25	8	23	0.81	31	Thunder, 15, 17.
Deer Park	1.33	9	22	0.93	12	
Orangeville	1.62	10	21	1.62	10	
Ursa	3.58	12	19	1.38	9	Thunder, 1, 4, 9, 12, 14, 15, 20, 30, 31.
Jermyn	1.90	8	23	1.60	9	Thunder, 24, 12, 26, 31.
Niagara Falls	2.81	9	22	0.84	12	
Molland	3.18	9	22	1.26	27	Thunder, 9, 12, 27.
Deshbrow	7.51	7	24	0.67	12	
NEW BRUNSWICK						
Point Escomire	2.63	10	21	0.98	13	
NOVA SCOTIA						
Port Morien	1.13	5	26	0.91	11	

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF JULY, 1904.

	HOURS ENDING.															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria		0.21	0.57	0.66	0.70	0.71	0.82	0.83	0.81	0.82	0.79	0.83	0.70	0.74	0.42	
Nanaimo	0.11	0.41	0.62	0.70	0.78	0.82	0.80	0.77	0.75	0.77	0.74	0.72	0.72	0.62	0.41	0.04
Agassiz		0.00	0.21	0.51	0.51	0.59	0.62	0.61	0.61	0.67	0.63	0.60	0.62	0.61	0.28	
Battleford	0.47	0.55	0.65	0.79	0.78	0.75	0.75	0.65	0.61	0.69	0.77	0.73	0.73	0.63	0.48	0.09
Indian Head		0.26	0.70	0.80	0.89	0.79	0.79	0.81	0.81	0.74	0.79	0.75	0.69	0.61	0.31	
Brandon		0.17	0.53	0.68	0.79	0.76	0.75	0.81	0.83	0.83	0.80	0.79	0.71	0.64	0.58	
Winnipeg	0.06	0.53	0.45	0.67	0.68	0.71	0.75	0.75	0.79	0.74	0.71	0.67	0.58	0.53	0.12	0.04
Woodstock		0.23	0.47	0.56	0.49	0.64	0.69	0.70	0.66	0.63	0.68	0.63	0.68	0.61	0.36	
Toronto		0.15	0.47	0.56	0.59	0.65	0.68	0.69	0.67	0.63	0.68	0.72	0.71	0.61	0.48	0.04
Lindsay		0.17	0.35	0.43	0.48	0.58	0.63	0.61	0.57	0.61	0.61	0.59	0.43	0.35	0.20	0.09
Gravenhurst		0.11	0.51	0.58	0.55	0.60	0.65	0.65	0.67	0.72	0.78	0.74	0.71	0.71	0.65	0.58
Kingston	0.03	0.31	0.56	0.61	0.61	0.61	0.67	0.71	0.57	0.72	0.67	0.55	0.42	0.42	0.24	
Ottawa		0.21	0.46	0.73	0.50	0.51	0.57	0.66	0.45	0.69	0.45	0.60	0.62	0.50	0.27	
Montreal		0.21	0.38	0.48	0.57	0.68	0.69	0.67	0.65	0.61	0.45	0.47	0.46	0.35	0.17	
Quebec		0.19	0.30	0.48	0.50	0.50	0.58	0.59	0.62	0.61	0.46	0.44	0.48	0.43	0.32	
Fredericton		0.17	0.36	0.40	0.44	0.49	0.65	0.73	0.71	0.70	0.68	0.65	0.59	0.60	0.37	0.04

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month. (Constant sunshine being 1.)	0.63	0.63	0.46	0.66	0.61	0.61	0.55	0.54	0.56	0.45	0.60	0.51	0.47	0.51	0.41	0.54
Difference from average.	0.07		-0.02	-0.08	+0.01	+0.05	-0.03	0.01	0.05	0.11		0.08	0.05	0.05		0.01
Maximum daily amount.	0.88	0.93	0.80	1.00	0.81	0.83	0.87	0.90	0.87	0.95	0.91	0.92	0.87	0.98	0.90	0.92
Date.	25	25	23	6	22	21	28	20	19	29	20	8	20	7	22	22
No. of days completely clouded.	1	2	7	1	2	0	1	1	1	3	0	2	2	1	1	2

Thunder recorded on :—

1. Ottawa, Port Stanley, Prince Albert, Grand Manan, Otonabee, Brome, Sutton, Galt, Stony Creek, Peterboro', Lakefield, Port Hope, Clontarf, Port Dover, Agincourt, Chicoutimi, Nelson, Sunshine, Smith Falls, Scarboro', Ennismore, Georgetown, Westport, Ursa, Quebec.
2. Banff, Minnedosa, Winnipeg, Yarmouth, Truro, Rat Portage, Percé, Brome, Brandon, Oakbank, Estevan, Moose Jaw, Rathwell, Gretna, Rosebank, Arden, Westport, Jermyn, Picton.
3. Rapid City.
4. Port Stanley, Barkerville, Gravenhurst, London, Otonabee, Galt, Bala, Nelson, Peterboro', Lakefield, Port Hope, Clontarf, Birnam, Brantford, Agincourt, Bullion, Princeton, Quesnel, Wyoming, Wooler, Scarboro', Georgetown, Ursa.
5. Ottawa, Port Stanley, Kingston, Sutton, Nelson, Bon Accord, Beaver Hills W., Montague, Sunshine, Croydon, Arden.
6. Nickle-Plate, Golden, Nelson, Threehills Creek, Wetaskiwin, Bon Accord, Beaver Hills W., Lacombe, Bruderheim, Princeton, Kneehill, Victoria, Alt., Hedley.
7. Nickle-Plate, Gleichen, Threehills Creek, Kneehill, Calgary, Edmonton.
8. Kimmount, Bruce Mines, Lloydminster, Estevan.
9. Winnipeg, Port Stanley, Kingston, Deseronto, Lindsay, Gravenhurst, Beatrice, Clinton, Otonabee, North Bruce, Galt, Bala, Peterboro', Lakefield, Port Hope, Lucknow, Clontarf, Birnam, Uplands, Laris, Brantford, Agincourt, Wetaskiwin, Bruderheim, Montague, Emsdale, Uxbridge, Wyoming, Sunshine, Wooler, Huntsville, Princeton, Lansdowne, Georgetown, Ursa, Midland, Athabasca Landing, Parry Sound.
10. Halifax, Medicine Hat, Prince Albert, Barnardo, Deseronto, Sutton, Nelson, Grenfell, Moose Jaw, Belmont, Rathwell, Oakdale Park, Rapid City, Smith Falls, Arden, Beaver Hills, E., Weyburn.
11. Banff, Minnedosa, Port Arthur, Quebec, Guelph, Otonabee, North Bruce, Galt, Agincourt, Nickle-Plate, Nelson, Reclamation Farm, Princeton, Bon Accord, Beaver Hills W., Wyoming, Aurora, Athabasca, Landing, Hedley.
12. Swift Current, Qu'Appelle, White River, Port Stanley, Grand Manan, Kingston, Quebec, Guelph, Deseronto, Lindsay, London, Clinton, Otonabee, Sutton, Galt, Stony Creek, Bala, Peterboro', Lakefield, Port Hope, Birnam, Uplands, Ursa, Lloydminster, Estevan, Foxleigh, Threehills Creek, Wetaskiwin, Owen Sound, Brantford, Agincourt, Chicoutimi, Brome, Thetis Island, Golden, Bon Accord, Gatesgarth, Moose Jaw, Beaver Hills W., Bruderheim, Regina, Emsdale, Sunshine, Croydon, Wooler, Princeton, Lansdowne, Arden, Georgetown, Wiarton, Jermyn, Midland, Regina, Weyburn, Hillsdown, Edmonton, Parry Sound.
13. Qu'Appelle, Sutton, Percé, Hillview, Aweme, Treherne, Estevan, Lacombe, Belmont, Rathwell, Rapid City, Smith Falls, Arden, Edmonton.
14. Minnedosa, Uplands, Bruce Mines, Savanne, Pierson, Oakdale Park, Rapid City, Ursa.
15. Swift Current, Medicine Hat, White River, Bermuda, Prince Albert, Montreal, Foxleigh, Gravenhurst, Otonabee, Rat Portage, Meaford, Aweme, Lloydminster, St. Peters, Saskatoon, Threehills Creek, Moose Jaw, Emsdale, Lion's Head, Wiarton, Ursa, Haileybury, Parry Sound.
16. Qu'Appelle, Medicine Hat, Prince Albert, Quebec, Rat Portage, Savanne, Oakbank, Bowman, Saskatoon, Gleichen, Threehills Creek, Gretna, Oakdale Park.
17. Saugeen, Winnipeg, Bermuda, Port Stanley, St. John, Port Arthur, Truro, Renfrew, Rocklyn, North Bruce, Lucknow, Clontarf, Birnam, Uplands, Rat Portage, Owen Sound, Point Clark, Nelson, Hillview, Brandon, Aweme, Morden, Estevan, Saskatoon, Gleichen, Belmont, Rathwell, Wyoming, Westport, Haileybury, Deloraine, Beaver Hill, E.
18. Minnedosa, Winnipeg, Barnardo, Port Stanley, Prince Albert, Port Arthur, Kingston, Sutton, Galt, Bruce Mines, Rat Portage, Cockburn Island, Point Clark, Saskatoon, Bon Accord, Beaver Hills W., Bruderheim, Rapid City, Lansdowne, Deloraine, Edmonton, Parry Sound.
19. Winnipeg, Bermuda, Port Stanley, Quebec, Truro, London, Otonabee, Stony Creek, Lakefield, Brantford, Agincourt, Chicoutimi, Lloydminster, Wooler, Scarboro'.
20. Halifax, Winnipeg, Bermuda, Grand Manan, Chatham, Sydney, Port Arthur, Beatrice, Sutton, Port Hope, Rat Portage, Agincourt, Cape Chatte, Oakbank, Treherne, Scarboro', Picton.
21. Port Stanley, Chatham, Port Arthur, London, Stony Creek, Princeton, Westport.
22. Banff, Port Stanley, London, Welland, Bon Accord, Wyoming.
23. Port Stanley, Sutton, Lucknow, Birnam, Lloydminster, Hillsdown, Wyoming.

24. Winnipeg, Prince Albert, Stony Mountain, Otonabee, Lakefield, Lucknow, Parry Sound.
 25. Bermuda.
 26. Saugeen, Barkerville, Port Simpson, Quebec, Truro, Brantford, Agincourt, Bullion, Bowsman, Jernyn, Kitamaat.
 27. Bermuda, Quebec, Lindsay, Gravenhurst, London, Beatrice, Clinton, Galt, Collingwood, Stony Creek, Bala, Welland, Lakefield, Lucknow, Sarnia, Uplands, Kinnmount, Cockburn Island, Meaford, Paris, Haliburton, Exbridge, Wyoming, Huntsville, Scarboro', Georgetown, Westport, Warton, Midland, Owen Sound, Brantford, Agincourt, Percé, Bullion, Bon Accord, Beaver Hills W., Haileybury.
 28. Swift Current, Qu'Appelle, Port Stanley, Quebec, London, Sutton, North Bruce, Galt, Lucknow, Birnam, Paris, Agincourt, Point Clarke, Cape Chatte, Chicoutimi, Golden, Lethbridge, Lloydminster, Foxleigh, Gleichen, Wetaskiwin, Bon Accord, Gatesgarth, Moose Jaw, Beaver Hills W., Bruderheim, Regina, Emsdale, Wyoming, Sunshine, Aurora, Lion's Head, Westport, Beaver Hill, E., Edmonton.
 29. Swift Current, Qu'Appelle, Medicine Hat, Minnedosa, Winnipeg, Quebec, Barnardo, Rat Portage, Aweme, Treherne, Indian Head, Lloydminster, Foxleigh, St. Peters, Threehills Creek, Innisfail, Belmont, Rathwell, Rapid City, Ursa, Croydon, Deloraine.
 30. Qu'Appelle, Stony Mountain.
 31. Port Stanley, Montreal, Deseronto, Beatrice, Otonabee, Galt, Peterboro', Wooler, Port Hope, Lucknow, Savanne, Point Clarke, Emsdale, Smith Falls, Huntsville, Scarboro', Georgetown, Jernyn, Parry Sound.

Aurora recorded :—

Where the class of aurora is noted by the observer, it is given, I being the brightest, (IV) the feeblest in brilliancy.

2. Georgetown, IV.
 5. Swift Current, Haileybury IV.
 6. Swift Current, Battleford, IV ; Prince Albert, I ; Father Point, II ; Truro, IV ; Bruce Mines, IV ; Rat Portage, IV ; Savanne, Cartwright, II, Haileybury III.
 7. Minnedosa, II ; Savanne, Cape Chatte, II, Haileybury IV.
 8. Haileybury IV.
 9. Halifax, IV ; Barnardo, Savanne.
 14. Grenfell.
 16. Threehills Creek, III.

FORECASTS FOR JULY, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1061. These was divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Per centage
Manitoba	85	73	10	2	91.8
Lake Superior	95	72	18	5	85.3
Lower Lake Region	119	106	9	4	92.9
Georgian Bay	119	90	16	4	89.9
Ottawa Valley.	100	82	11	7	87.5
Upper St. Lawrence	100	85	12	3	91.0
Lower St. Lawrence.	110	89	16	5	88.2
Gulf, . . .	115	90	12	4	91.3
Maritime Provinces, West	100	86	17	6	86.7
Maritime Provinces, East.	100	80	20	9	82.6
Total	1061	871	111	49	88.7

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto.
 26th August, 1904.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

AUGUST, 1904.

No. 8.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

Over the islands and lower mainland of British Columbia the weather was unusually dry in most districts whilst other conditions differed little from the normal. With the exception of some showers at a few places on the 1st fair weather prevailed until the last three days of the month, when much rain was recorded. In this portion of the province vegetation was somewhat withered by the drought. Over the upper mainland the weather conditions were similar to conditions further westward, but the dates of rainfall were in most localities about the 20th, 23rd, and last three days. Vegetation was much affected by the drought.

The weather in the North-west Territories was generally cool and dry, both the temperature and rainfall, with some quite local exceptions, being below the average. Clouded skies were frequent, more especially about the 1st, 2nd, 8th to 11th, 16th to 23rd and last three days of the month, light rain also occurring frequently during these cloudy periods. These frequent showers were probably more beneficial than heavy rain and the condition of vegetation was excellent on the 30th.

In Manitoba the weather was mostly cool and dry, but in the vicinity of Minnedosa, Brandon and St. Albans, on the contrary, it was somewhat wet. Bright sunshine was of frequent occurrence more especially during the first half of the month when, with the exception of showers about the 3rd and 11th, little rain was recorded. After the 15th clouded skies and showers were more frequent, heavy falls of rain occurring at most places about the 18th and 20th. Light frost occurred at a few stations, but did not cause any damage and the condition of vegetation was normal.

In most districts in Ontario the weather was exceedingly cool and unusually wet; there were, however, many fine days with much bright sunshine. From the 1st to 9th it was generally fine and dry, after which rain occurred at intervals of two or three days until about the 26th when it again became fine and continued so in most localities to the 31st. Thunderstorms were numerous and in many instances they were accompanied by heavy rains. On the 19th and 20th rain to a depth of five inches was recorded at Watford and nearly four inches at Wyoming. Light frosts occurred at several places causing some damage to plant life and the condition of vegetation was somewhat below normal on the 31st.

In the Province of Quebec the weather was mostly cool and wet in western counties and warm and dry east of the City of Quebec, excepting in the vicinity of Father Point where the rainfall exceeded the average. During the first twelve days there was much fine bright weather, after which showers were frequent until about the 23rd, when with the exception of heavy rain at some places on or about the 25th fair weather was general to the end of the month. Vegetation was in good condition in western districts but somewhat withered in the eastern portion of the Province.

The weather in New Brunswick did not depart much from the normal excepting in the vicinity of St. John where it was somewhat cool and wet. Much bright sunshine was recorded, more especially during the first and last week, but showers were frequent during the intervening periods. On some portions of the coast fogs were quite frequent, they being recorded on sixteen days at Point Lepreau and on nine days at Grand Manan. Light frosts occurred at many places and delicate plants were injured thereby late in the month.

In Nova Scotia the departures from the normal at the various stations were generally unimportant, excepting at Halifax where it was unusually cool and wet and at Port Hastings where the total rainfall was also quite excessive. Rain occurred at most places on or about the 2nd after which fair weather prevailed until the 11th. Showers were then frequent until about the 23rd when it again became fine and continued so almost uninterruptedly to the end of the month. A heavy south-westerly gale occurred on the 20th and 21st when much rain fell. Vegetation showed signs of autumn decay at an unusually early date in northern districts.

The weather in Prince Edward island was mostly fair and warm during the first ten days after which showers were somewhat frequent to the 24th when it again turned fine, and there was much bright sunshine to the end of the month. The total rainfall was quite light in most districts and vegetation was somewhat injured by drought. F. F. PAYNE.

ATMOSPHERIC PRESSURE.

Atmospheric pressure was above the average amount in all portions of the Dominion except probably in the far north and north-east. In the northern portions of British Columbia the excess was as much as two-tenths of an inch diminishing to from three to five-hundredths of an inch in Manitoba, Ontario, Quebec and the Maritime Provinces.

HIGH AREAS.

Seven areas of high pressure were charted during the month, five first appearing in the far North-west and two on the west United States Pacific Coast. A feature of the areas was that the centres of six passed over either the Lower Lake Region or the Georgian Bay district and the seventh only a little to the southward of the Lower Lake Region.

For the time of year many of the areas displayed considerable energy accompanied by much cool weather, but no damaging white frosts were anywhere recorded, not omitting Manitoba and the North-west Territories.

LOW AREAS.

Eight areas of depression were sufficiently well marked to be charted, all travelling from some point west or north-west over the Great Lakes and down the St. Lawrence Valley. Many of the depressions shewed much energy for the season of the year and they were usually accompanied by copious rains and numerous heavy thunderstorms. Area No. 6 which appeared on the 18th and quickly travelled over the Lower Lakes, the St. Lawrence Valley and the Maritime Provinces, was remarkable for its accompanying excessive rainfalls and high winds, the gale caused by it in many portions of the Maritime Provinces being reported as severe. No. 8 which appeared in Alberta on the 22nd was also worthy of more than passing notice, in that between the 25th and 26th it brought gales from Lake Superior to the Maritime Provinces, the storm being pronounced over the Lake Region.

WINDS.

Over Vancouver Island and the Mainland of British Columbia the direction was chiefly southerly to southwesterly with five days of strong and six of fresh breezes.

In the North-west Territories the south and west directions predominated with four days of strong and eleven of fresh breezes.

In Manitoba the north-west to south-west directions were most in evidence with ten days of strong and nine of fresh breezes.

In the Lake Region the north-west to south-west directions were the most general with five days of strong and ten of fresh breezes and two moderate gales.

In the Ottawa and Upper St. Lawrence Valleys the direction was largely between the south and west with three days of strong and eight of fresh breezes and two moderate gales.

In the Lower St. Lawrence Valley and the Gulf the westerly direction predominated with nine days of fresh breezes and two gales.

In the Maritime Provinces the direction was chiefly westerly to southerly with three days of strong and seven of fresh breezes and two gales.

The gales from the Lakes to the Maritime Provinces occurred between the 20th and 21st and on the 25th. For the first storm, stations in the Maritime Provinces south and east of the Miramichi River were not warned, and at a number of the Lake Stations the warning was received late but the storm of the 25th was successfully warned throughout.

TEMPERATURE.

The temperature was below the average throughout the Dominion, it we except a few isolated localities where the average was just maintained, and in Cariboo, in Northern British Columbia, where it was exceeded by 1 degree. The most pronounced negative departures occurred in Ontario, varying from 2 to as much as 6 degrees in some localities. Western Quebec was from 2 to 3 degrees below; the greater part of the North-west Territories from 2 to 4 degrees below, and south-western Nova Scotia 3 degrees below.

The highest and Lowest temperatures in each Province during August, 1901, were:

British Columbia,	102° 50 on 4th at Enderby,	24° 32 on 23rd at Stuarts Lake.
N. W. Territories,	97° 50 on 1st at Gray Hill,	25° 36 on 28th at Lloyminster.
Manitoba,	96° 55 on 11th at Aweme,	26° 50 on 29th at Bowsman.
Ontario,	97° 50 on 4th at North Gower,	25° 50 on 29th at Savanne.
Quebec,	83° 52 on 7th at Sherbrooke,	34° 50 on 29th at Roberval.
New Brunswick,	90° 51 on 1st at St. Stephen,	34° 50 on 30th at St. Stephen.
Nova Scotia,	87° 54 on 8th at Truro,	34° 50 on 30th at Parrsboro.
Prince Edward Island,	82° 51 on 5th at Charlottetown,	44° 50 on 24th at Charlottetown.

PRECIPITATION.

The rainfall was below the average from Vancouver Island to Manitoba, except in a few isolated localities, noticeably at Calgary, Regina and Minnedosa, each of these places recording a small positive departure. A slight deficiency occurred on the western shores of the Georgian Bay and Lakes Huron and Erie, also in counties from Peterboro' to Carleton, but in Ontario, generally, the rainfall was greatly in excess of the average, as it likewise was in the Province of Quebec.

In the Maritime Provinces the average amount was exceeded by 2.62 inches at St. John, 2.63 inches at Grand Manan, and at Halifax by 2.20 inches, but elsewhere, with few exceptions, the average quantity was not exceeded. This was especially the case in portions of Prince Edward Island.

BRIGHT SUNSHINE.

Bright sunshine was below the average over the mainland of British Columbia and eastward to western Manitoba and elsewhere in the Dominion above the average, including Victoria, Vancouver Island. The percentage of possible duration ranged from 69 at Nanaimo and 67 at Gravenhurst to 48 at Indian Head and 42 at Agassiz.

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, AUGUST, 1904.

* Stations not furnished with Registering Thermometers.
Barometer not reduced to Sea Level.

[illegible]

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, AUGUST, 1901.

* Stations not furnished with Registering Thermometers.

[illegible]

PRECIPITATION AT STATIONS REPORTING RAIN, WEATHER, &c., DURING AUGUST, 1904.

STATION	RAIN FALL					REMARKS
	Amount in inches	No. of Days, 0.1 or Over	No. of Fair Days	Heaviest Fall in Month	Date	
BRITISH COLUMBIA						
	in.			in.		
Coquitlam	1.14	1	30	1.14	28	
Goldstream Lake	0.93	3	27	0.67	28	
Sooke Lake	0.92	3	28	0.49	29	
Nanaimo	1.39	2	29	1.39	28-29	
Royal Oak	0.42	2	29	0.26	28	
Nasas Harbour	1.24	3	28	0.65	9	
N. W. TERRITORIES						
Beaver Hills, E	1.22	4	27	0.60	11	Thunder, 10, 17, 31. Frost, 28.
Weyburn	1.28	6	25	0.58	21	15, cutting wheat.
Regina	1.75	8	23	0.50	18	Thunder, 18, 24. 18, severe frost.
Innisfail	1.39	10	21	0.36	17	
Cootts	0.90	3	28	0.80	27	
Bruderheim	1.17	7	24	0.45	10	15, barley cutting; 22, wheat cutting
Lacombe	1.26	4	27	0.45	18	Thunder, 5, 11.
Beaver Hills, W	1.17	9	22	0.37	9	Thunder, 9, 17, 26, 31.
Last Mountain..	0.66	5	26	0.20	24	
Stirling	1.04	3	28	0.63	19	
Dirt Hill-	1.50	5	26	1.00	29	
Victoria.	1.18	7	24	0.53	8	Thunder, 1, 26. 29, frost damaged potatoes
MANITOBA						
Beaver	2.24	8	23	0.81	21	
Norquay	2.71	9	21	1.24	21	Thunder, 3, 11, 19. Frost on 16, 21.
Deloraine..	1.19	8	23	0.45	18	Thunder, 1, 11.
Rathwell	1.78	8	20	1.06	21	Thunder, 3, 6, 11, 16, 18.
Greta	2.34	9	22	0.59	18	Thunder, 3, 12. 22, harvest began.
Rapid City	2.36	9	20	0.58	3	Thunder, 3, 19, 18.
Rosebank	3.24	7	24	0.60	21	Thunder, 11. 25, harvest started
Belmont	3.68	6	25	1.22	20	Thunder, 2, 3, 11, 18.
Cartwright	1.93	5	26	0.94	29	
ONTARIO						
Ennismore	3.29	7	24	1.40	29	
Westport	2.86	7	24	2.03	29	Thunder, 25th.
Dealbawn..	2.93	5	26	2.18	29	Thunder, 25th.
Georgetown	4.33	11	18	2.34	29	Thunder, 2, 10, 13, 15, 16, 22, 24. Aurora, 17.
Westminster	4.40	6	25	2.65	29	Thunder, 13, 21.
Sunshine	2.78	9	22	1.26	29	Thunder, 8, 14, 16.
Warton	1.61	8	23	0.49	13	Thunder, 10, 13, 16, 21. 29, sharp frost.
Midland	1.88	7	24	0.67	19	
Huntville	4.17	11	20	1.28	29	Thunder, 1, 19, 25.
Parna	2.96	8	23	1.00	19	
Montague	3.34	6	25	2.34	29	Frost, 29th.
Ursa	4.40	8	23	1.08	18	Thunder, 10, 13, 25, 28. 29, frost.
Lions Head	4.15	8	23	0.32	16	Thunder, 4th.
Wyoming..	6.00	8	23	3.19	19-20	Thunder, 13, 16, 17, 22, 25. 29, a flood.
Elkton	4.00	8	23	1.11	29	Thunder, 13, 16.
Goderich	2.10	5	26	0.50	19	
Orangeville	3.19	7	24	1.58	29	
Scarboro	3.98	9	20	1.80	29	Thunder, 2, 7, 13, 16, 22.
Dutton	3.83	7	24	2.75	19-20	
Sydenham	3.32	4	27	2.20	29	
Watford	7.15	5	26	5.0	19-20	
Aurora	4.84	7	24	1.86	16	Thunder, 16, 25.
Oliver's Ferry	2.61	6	25	2.00	29	Frost, 29th.
Arden	3.16	11	20	2.17	20-21	Thunder, 1, 8, 16, 23.
Lansdowne	3.37	7	24	0.78	19	Thunder, 8, 10, 17.
Ensdale	4.87	15	16	1.65	26	Thunder, 1, 10, 15, 17, 25. Aurora, 1.
Wooler	4.87	7	24	1.61	29	Thunder, 13, 22, 25.
Croydon	2.64	5	26	2.00	29	Frost, 19, 30. Thunder, 25.
Niagara Falls	3.12	6	25	1.50	19	Thunder, 1, 10, 13, 18, 31.
Smiths Falls	3.64	9	22	0.97	9	Thunder, 14.
Deer Park.	3.76	7	24	1.91	19	
NEW BRUNSWICK						
Point Escomb	1.40	11	20	0.62	21	
NOVA SCOTIA						
Port Mores	1.03	2	29	0.87	21	

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF AUGUST, 1904

	HOURS ENDING															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria		0.04	0.25	0.51	0.61	0.78	0.84	0.85	0.88	0.86	0.85	0.82	0.83	0.63	0.47	
Nanaimo		0.22	0.55	0.72	0.75	0.85	0.89	0.90	0.90	0.83	0.85	0.89	0.78	0.52	0.21	
Agassiz		0.00	0.08	0.26	0.40	0.51	0.64	0.66	0.75	0.78	0.71	0.56	0.39	0.24	0.03	
Battleford		0.11	0.40	0.59	0.66	0.71	0.72	0.66	0.64	0.60	0.67	0.59	0.52	0.38	0.09	
Indian Head		0.00	0.26	0.51	0.61	0.67	0.69	0.59	0.62	0.61	0.71	0.68	0.59	0.41	0.06	
Brandon		0.00	0.21	0.47	0.67	0.73	0.72	0.69	0.66	0.68	0.70	0.61	0.57	0.53	0.59	
Winnipeg		0.41	0.69	0.71	0.73	0.69	0.72	0.71	0.74	0.76	0.76	0.74	0.66	0.46	0.11	
Woodstock		0.03	0.26	0.63	0.70	0.71	0.71	0.72	0.71	0.72	0.75	0.74	0.66	0.54	0.01	
Toronto.	S.	0.32	0.68	0.75	0.71	0.79	0.80	0.81	0.75	0.71	0.74	0.64	0.63	0.37	S.	
Lindsay.		0.10	0.33	0.48	0.61	0.72	0.71	0.73	0.72	0.70	0.68	0.56	0.50	0.50	0.44	0.06
Gravenhurst		0.03	0.53	0.63	0.71	0.77	0.75	0.77	0.72	0.77	0.78	0.79	0.75	0.73	0.53	0.07
Kingston		0.18	0.58	0.61	0.72	0.73	0.72	0.77	0.5	0.75	0.76	0.70	0.62	0.48	0.13	
Ottawa.		0.06	0.45	0.59	0.68	0.71	0.69	0.73	0.72	0.74	0.73	0.66	0.70	0.55	0.10	
Montreal.		0.06	0.48	0.64	0.67	0.72	0.69	0.71	0.74	0.70	0.69	0.61	0.51	0.19	S.	
Quebec.		0.08	0.37	0.55	0.65	0.67	0.73	0.68	0.75	0.63	0.61	0.56	0.54	0.49	0.07	
Fredericton.		0.03	0.33	0.49	0.61	0.69	0.69	0.74	0.73	0.72	0.72	0.68	0.66	0.56	0.28	

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month. (Constant sunshine being 1.)	0.62	0.69	0.42	0.52	0.48	0.52	0.63	0.58	0.63	0.56	0.67	0.61	0.58	0.61	0.52	0.57
Difference from average.	+0.05	-	-0.03	-0.04	-0.01	-0.05	+0.03	+0.03	-0.05	-0.02	-	-0.05	-0.07	-0.03	-	-0.07
Maximum daily amount	0.85	0.91	0.80	0.90	0.81	0.86	0.94	0.90	0.91	0.97	0.93	0.92	0.86	0.93	0.80	0.92
Date	4	1	3	25	25	5	25	30	18	27	23	27	29	15	23	3
No. of days completely clouded.	2	2	4	1	4	2	2	5	0	1	0	4	3	4	3	3

Aurora recorded:—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. Emsdale, III : Bruce Mines, IV : Rat Portage, Savanne, Gravenhurst, IV : Haileybury, III.
3. Cape Chatte, I : Cape Magdalen, Gravenhurst, IV : Grand Manan, IV : Quebec, III : Father Point, III : Montreal, IV : Truro, IV.
4. Halifax, IV.
6. Bruce Mines, III : St. Peter, III : Aweme, IV.
9. Cape Chatte, III : Gravenhurst, IV : Grand Manan, IV.
13. Haileybury, IV.
15. Rat Portage, IV : Haileybury, IV.
16. Truro, IV.
17. Georgetown, IV : Rat Portage, IV : Aweme, IV.
18. Aweme, III : Lloydminster.
21. Rat Portage, IV.
22. Haileybury, III.
29. Haileybury, III.
30. St. Peter, II : Gravenhurst, IV : Haileybury, IV.
31. Father Point, III.

Thunder recorded on :

1. E. Beaver Hills, Huntsville, Arden, Emsdale, Brome, Wetaskiwin, Bon Accord, Victoria, Smiths Falls.
2. Deloraine, Belmont, Scarboro, Toronto, Sydney, Halifax, Grand Manan, Bermuda, Kneehill, Threehills Creek, Hillsdown, Truro.
3. Norquay, Rathwell, Gretna, Rapid City, Belmont, Savanne, Rat Portage, Hillview, Almasippi, Minnedosa, Qu'Appelle, Foxleigh, Moose Jaw.
4. Cockburn Island, Lucknow, Bruce Mines, Stony Mountain, White River.
5. Lions Head, Chicoutimi, Brome, Cockburn Island, N. Bruce, Bruce Mines, White River, Quebec, Banff, Montreal, Lacombe.
6. Rathwell, Chicoutimi, Brome, Clontarf, Oakdale Park, St. John, Quebec, Father Point, Haileybury.
7. Georgetown, Princeton, Scarboro, St. Stephen, Sussex, Moncton, Point Clark, Brantford, Port Hope, Lakefield, Paris, Stony Creek, Lucknow, Agincourt, Tobacco Plains, Nelson, London, Toronto, Banff, Woodstock, Kneehill, Threehills Creek, Stuarts Lake.
8. Arden, Lansdowne, Rat Portage, Sutton, Deseronto, Kingston, Abernethy.
9. Meaford, Quesnel, Bon Accord, Beaver Hills.
10. E. Beaver Hills, Rapid City, Georgetown, Wiarton, Princeton, Huntsville, Ursa, Lansdowne, Emsdale, Beatrice, Owen Sound, Birnam, Haliburton, Port Hope, Paris, Clinton, Rocklyn, Bala, Clontarf, Agincourt, Gravenhurst, London, Kingston, Edmonton, Port Stanley, Bon Accord Smiths Falls, Gay Hill.
11. Norquay, Deloraine, Rathwell, Rosebank, Belmont, Brome, Savanne, Hillview, Almasippi, Yarmouth, Threehills Creek, Lacombe.
12. Gretna, Birnam, Cockburn Island, White River.
13. Georgetown, Westminster, Wiarton, Princeton, Ursa, Wyoming, Uxbridge, Scarboro, Wooler, Beatrice, Owen Sound, Point Clark, Port Dover, Brantford, Port Hope, Lakefield, Paris, Collingwood, Sutton, Clinton, N. Bruce, Rocklyn, Bala, Lucknow, Peterboro, Agincourt, Meaford, Deseronto, Guelph, London, (violent,) Toronto, Saugeen, Bermuda, Port Stanley, Woodstock, White River, Smiths Falls, Haileybury.
14. Sunshine, Birnam, Quebec, Deer Park, Abitibi.
15. Emsdale, Parrsboro, Moncton, Owen Sound, Point Clark, Savanne, Clinton, N. Bruce, Rocklyn, Lucknow, Bruce Mines, Meaford, Saugeen, Grand Manan, Quebec, Foxleigh, Gatesgarth, Bon Accord, Abernethy, Haileybury, Pietou, Truro.
16. Rathwell, Georgetown, Sunshine, Wiarton, Princeton, Wyoming, Uxbridge, Scarboro, Aurora, Arden, St. Stephen, Brome, Haliburton, Brantford, Kimmout, Rat Portage, Lakefield, Paris, Collingwood, Sutton, Clinton, Bala, Lucknow, Peterboro, Clontarf, Agincourt, Deseronto, Gravenhurst, Toronto, Saugeen, Parry Sound, Port Arthur, Quebec, Port Stanley, Montreal, Orillia.

17. E. Beaver Hills, Wyoming, Lansdowne, Emsdale, Brome, Lakefield, Uplands, Sutton, Agincourt, Montreal, Bon Accord, Beaver Hills, W., Abitibi, Haileybury, Gray Hill.

18. Rathwell, Belmont, Indian Head, Hillview, Almasippi, Revelstoke, Calgary, Qu'Appelle, Banff, Foxleigh, Gleichen, Moose Jaw, Brownhill, Threehill Creek, Bon Accord, Abernethy, Saskatoon, Regina, Smiths Falls, Truro.

19. Norquay Channel, *Storriefie*, Revelstoke, Swift Current, Medicine Hat, Qu'Appelle, Foxleigh, Estevan.

20. Arden, Parrshoro, Peterboro, Bon Accord, Estevan.

21. Westminster, Warton, Birnam, Point Clark, Cockburn Island, Bruce Mines, Haileybury.

22. Georgetown, Princeton, Wyoming, Scarboro, Wooler, Haliburton, Brantford, Kimmount, Paris, Stony Creek, Sutton, N. Bruce, Lucknow, Clontarf, Agincourt, Deseronto, Toronto, Saugeen, Montreal, Woodstock, Orillia, Gray Hill.

23. Arden, N. Bruce, Kingston, Bermuda.

24. Georgetown, Birnam, N. Bruce, Bruce Mines, White River, Port Arthur, Bermuda, Foxleigh, Saskatoon, Regina.

25. Westport, Dealtown, Huntsville, Ursa, Wyoming, Aurora, Emsdale, Wooler, Croydon, Brome, Haliburton, Port Doyer, Kimmount, Port Hope, Uplands, Bala, Peterboro, Clontarf, Bruce Mines, Gravenhurst, Guelph, Deseronto, London, Toronto, Parry Sound, White River, Quebec, Bermuda, Port Stanley, Montreal, Woodstock.

26. Sutton, Victoria, Alta, Beaver Hills, W.

27. Bruce Mines, Bermuda, Edmonton, Abitibi.

28. Ursa, Cape Chatte, Uplands, Princeton, B.C., Quebec, Nickel Plate.

29. Bala, Princeton, B.C., Gray Hill.

30. Princeton, B.C., Threehills Creek, Hillsdown, Gray Hill.

31. E. Beaver Hills, Barkerville, Threehills Creek, Hillsdown, Beaver Hills, W., Smiths Falls.

FORECASTS FOR AUGUST, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1193. These was divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			Per- centage
		No. Fully	No. Partly	No. Not	
Manitoba	85	59	22	4	82.4
Lake Superior	119	84	28	7	82.4
Lower Lake Region	127	90	33	3	84.6
Georgian Bay.	128	90	31	3	85.5
Ottawa Valley	117	89	26	5	86.8
Upper St. Lawrence	117	90	24	4	88.0
Lower St. Lawrence.	123	92	27	4	86.8
Gulf.....	127	87	33	7	84.5
Maritime Provinces, West	125	88	26	12	80.4
Maritime Provinces, East.	125	90	25	10	82.0
Total	1193	864	275	54	83.9

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,

Meteorological Office, Toronto,
26th September, 1904.

Director.

Monthly Weather Review.

VOL. XXVIII. SEPTEMBER, 1904.

No. 9.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather in British Columbia was generally warm and dry, excepting in the vicinity of Port Simpson where it was somewhat cool and wet, and Barkerville where the rainfall also exceeded the average. Over the Lower Mainland and Islands much cloudy and foggy weather prevailed throughout the month, nevertheless there was little rain until after the 20th, and the winds were mostly light or moderate. Over the Upper Mainland there was more sunshine than in districts further westward, fine bright weather prevailing from the 1st to 5th, 9th to 20th and 23rd to 26th. Rain was recorded at most places on or about the 8th, 22nd and 27th to 30th. Frosts occurred at many stations, more especially about the 19th and 20th when vegetation in many localities quickly assumed its autumn dress.

In the North-west Territories the weather conditions varied with the district, much rain occurring in some places, whilst in others it was below the average; and although the temperature did not depart much from the normal, excepting locally, the same inequalities were noticeable. Up to the 9th the nights were cool, but it was comparatively warm during the day. After this date however there was a marked fall in the temperature and although there were some warm days, more especially after the 24th frosts were quite frequent at night up to the end of the month. From the 3rd to 11th and last six days of the month there was much bright weather, but the total sunshine of the month was somewhat below the average. The leaves of the trees were changing colour on the 7th.

The weather conditions in Manitoba were similar to conditions in the Territories the departures from the normal varying with the district and being unimportant in most localities. During the first eleven days the weather was mostly fair although showers occurred at some places on the 1st. Much cloudiness prevailed and on the 12th and up to the 18th rain was frequently recorded, some showers also being reported on or about the 24th and 28th. From the 1st to 10th the temperature remained comparatively high, but after the latter date, with the exception of some warm days about the 15th to 17th and 26th to 30th lower temperatures were general and frosts were frequent. After the first week vegetation was withering.

In Ontario the weather was exceedingly cool, more especially in districts removed from the Great Lakes. It was also unusually cloudy and wet in northern and eastern counties, but fine and dry at most places in the western portion of the province. During the first two or three days rain occurred in most localities, after which, although showers were recorded at a few stations, it was comparatively fine until the 12th, this fine weather period being somewhat extended in western counties. On and after the 12th showers were again frequent at short intervals in most localities and continued to the end of the month, much rain falling about the 24th, 25th, 26th and 28th. Frosts having occurred quite early in the month, vegetation quickly assumed its autumnal garb, and by the 20th, although the foliage was comparatively green in southern counties, it had completely changed in Muskoka and contiguous districts.

In the Province of Quebec the weather was exceedingly cool and dull and although it was comparatively dry in most districts in the eastern portion of the province it was unusually wet elsewhere. Up to the 18th although the nights were cool the days were moderately warm, but after this date lower temperatures were frequent and frosts occurred upon several nights. Vegetation was withering quite early in the month and by the 30th some trees were denuded of leaves.

In New Brunswick the weather was somewhat cool and exceedingly wet; fresh winds were also of frequent occurrence and gales were recorded on the 15th and 24th. On the former date the wind exceeded sixty miles at St. John. A marked drop in the temperature occurred on the 19th and the weather continued quite cool to the end of the month. During this period frosts, which had also been recorded previously, became more frequent, and on or about the 23rd they were quite severe. Snow flurries were also reported on the same date at a few places. By the 25th the trees had changed colour but on the 30th they still retained their leaves.

The weather in Nova Scotia was similar to that in New Brunswick, it being wet and generally cool though somewhat drier than in the latter province. Much bright sunshine was recorded, more especially from the 7th to 20th, and although the weather was cool after the 14th the first half of the month was comparatively warm. On the 15th a gale of marked severity swept over the province. Light frosts occurred upon several nights and vegetation was withering at an unusually early date.

In Prince Edward Island there was much fine bright weather, more especially during the first half of the month, but it was quite cool and the rainfall was excessive. Frosts were recorded on the 22nd, 23rd and 28th and the signs of autumn decay were visible everywhere after the 20th.—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

No negative departures from the normal value of the mean atmospheric pressure for September occurred in Canada.

The mean pressure varied from normal at Charlottetown, P. E. I., St. John, N.B. and Ottawa, Ont. to 0.15 of an inch above at Battleford, N. W. T.

HIGH AREAS.

During September all areas of high barometric pressure which crossed the Continent were first observed north of the 43rd parallel of latitude and the greater number over British Columbia and the Northwest Territories. These areas, for the most part, drifted over the Lake Region to the Atlantic, and many were quite pronounced, one at least, being of a wintry type.

LOW AREAS.

The cyclonic systems which traversed the Continent during September exhibited a remarkable similarity of course, and with the exception of one area, apparently of West Indian origin, all crossed the Lake Region. With this exception, and also of one area from the Western States, the systems were first observed over British Columbia and the Northwest Territories.

Only a few low areas were of a pronounced type, but unsettled stormy weather was of frequent occurrence.

WINDS.

Over Vancouver Island and the Mainland of British Columbia the winds were largely light and variable, the force of a strong breeze occurring on only three days and that of a fresh breeze on eight days.

In the Northwest Territories the direction was chiefly between the northwest and southwest with five days of strong and fourteen of fresh breezes.

In Manitoba no one direction was paramount. There were eight days with strong and fourteen with fresh breezes.

In the Lake Region the northwest and southwest directions were the most general. There were three gales besides seven days of strong and eight of fresh breezes.

In the Ottawa and Upper St. Lawrence Valleys the direction was likewise, mainly between the northwest and southwest. There was one gale, as well as six days of strong breezes and eleven of fresh.

In the Lower St. Lawrence Valley and the Gulf the westerly direction predominated with three gales together with nine days of strong and thirteen of fresh breezes.

In the Maritime Provinces the westerly to southerly directions chiefly obtained with three gales, as well as five days of strong and fourteen of fresh breezes.

The gales on the Lakes occurred on the 14th, 21st and on the 29th and 30th, the first and last being the most severe.

In the St. Lawrence Valley and the Maritime Provinces the gales were on the 15th, 24th and 30th, the gale of the 15th being exceptionally severe. The gale of the 24th in the Maritime Provinces was not warned south of the Miramichi River, otherwise the storms were all successfully warned.

A cautionary warning issued to the Lake Stations on the 24th as well as to the stations in the Lower St. Lawrence Valley and the Bay of Chaleur was hardly justified by subsequent high winds, although in one or two isolated localities agents report that a moderate gale was experienced.

BRIGHT SUNSHINE.

Bright sunshine exceeded the average amount over British Columbia and New Brunswick, also locally to a slight extent in Ontario. Elsewhere in Canada the normal value was reached in few localities. The range of departure from average was very large, the extremes being -22% at Victoria, B. C. and -13% at Winnipeg, Man.

TEMPERATURE.

The mean temperature of September was higher than the average over British Columbia and the western portions of the Northwest Territories and lower than the average in all other parts of the Dominion. The largest positive departures reported were 3° in parts of British Columbia and Western Assiniboia, and the largest negative 5° in the more central portions of the Province of Quebec. In Manitoba and the eastern portions of Assiniboia and Saskatchewan the negative departure was from 1 to 2 degrees.

The highest and Lowest temperatures in each Province during September, 1904, were :

British Columbia,	$89^{\circ} \pm 2$ on 4th at Alberni,	$19^{\circ} \pm 0$ on 19th at Big Creek.
N. W. Territories,	$89^{\circ} \pm 7$ on 8th at Lethbridge,	$11^{\circ} \pm 0$ on 13th at Red Deer.
Manitoba,	$84^{\circ} \pm 0$ on 27th at Aweme,	$20^{\circ} \pm 0$ on 11th at Virden.
Ontario,	$93^{\circ} \pm 0$ on 2nd at Sarnia,	$19^{\circ} \pm 0$ on 22nd at White River.
Quebec,	$77^{\circ} \pm 6$ on 18th at Sherbrooke,	$26^{\circ} \pm 8$ on 23rd at Sherbrooke.
New Brunswick,	$83^{\circ} \pm 0$ on 12th at Chatham,	$22^{\circ} \pm 0$ on 23rd at St. Stephen.
Nova Scotia,	$78^{\circ} \pm 0$ on 12th at Wolfville,	$24^{\circ} \pm 4$ on 23rd at Parrsboro.
Prince Edward Island,	$76^{\circ} \pm 0$ on 16th at Hamilton,	$35^{\circ} \pm 3$ on 23rd at Charlottetown.

PRECIPITATION.

The most pronounced feature of the precipitation was the excessive rainfall over the Province of Quebec, particularly in the Eastern Townships, where the amount in some localities aggregated over nine inches. The fall was also in excess of the average in the Maritime Provinces and in northern and eastern Ontario. Nearly all stations in the western portions of Ontario report a deficiency which was most marked on the high lands of the more central counties.

St. Catharines	79	17	51	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1</
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PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
SEPTEMBER, 1904.

STATION	RAIN FALL					REMARKS
	Amount in inches	No. of Days, 01. or Over	No. of Fair Days	Heaviest Fall in Month	Date	
BRITISH COLUMBIA—	in.			in.		
Cogitlam	2.91	3	27	0.74	8	
Naas Harbour	15.00	16	11	1.71	5	
Sooke Lake	0.70	4	26	0.40	28	
Royal Oak	0.15	5	25	0.20	7	
Albernie	1.22	8	22	0.68	22	
Goldstream Lake	1.66	4	26	0.15	28	
Nanaimo	0.40	3	27	0.70	27	
N. W. TERRITORIES—						
Bruderheim	2.47	12	18	0.52	8	Thunder, 8, 12. Frost, 10, 13. Snow on 23.
Regina	2.41	11	19	1.05	4	Thunder, 27, 28, 29.
Innisfail	0.57	6	24	0.31	23	Snow on 23rd. Measured as rain.
Lacombe	1.47	5	25	0.81	19	23. snow-storm, melting as it fell.
Lost Mountain	2.41	8	22	1.00	18	Aurora 5th. Heavy hailstorm 18th.
Beaver Hills, E.	2.33	8	22	0.65	4	
Dirt Hill	3.52	13	17	0.60	4	
Arlington Beach	2.20	1	27	1.02	18	
Victoria	2.14	10	20	0.39	9	
MANITOBA						
Beaver	0.66	6	24	0.19	12	
Rosebank	1.88	7	23	0.57	13	Frost on 11.
Rapid City	0.73	4	18	0.51	12	Frost on 11.
Norquay	1.19	8	21	0.37	13	Hard frost on 11 and 12.
Cartwright	0.99	5	21	0.66	4	Temperature 20° on 14th.
Belmont	1.19	7	23	0.48	13	Thunder 1, 28.
Rathwell	1.95	10	17	1.14	13	Frost 6, 11, 12, 14, 20, 21.
Gretna	1.59	6	24	0.51	13	First frost 11.
Deloraine	0.70	6	24	0.30	13	
ONTARIO						
Uxbridge	1.48	10	20	0.65	21	Frost 6, 13. Ice on 21.
Croydon	3.98	7	23	0.94	24	Frost 6, 21. Thunder on 24.
Sydenham	4.69	9	21	0.90	21	
Parma	5.61	9	21	1.22	15	
Georgetown	2.05	11	16	0.51	2	Thunder 2, 3, 20, 24.
Wooler	3.21	11	19	0.92	29	Thunder 3, 20, 21, 29. Frost 6, 13, 22.
Arden	2.74	14	16	0.50	20	Thunder 3, 1, 19, 29, 30. Frost 13, 22, 28.
Lansdowne	3.20	7	22	0.90	30	Frost 21, 27.
Goderich	2.13	5	25	0.80	24	
Westminster	1.50	8	22	0.32	14	Thunder 2, 25. Frost 22.
Jerman	4.20	6	24	0.67	22	Thunder, 13, 16, 22.
Orangeville	3.59	10	20	2.04	24	Snow on 22.
Ennismore	2.28	1	26	0.85	29	
Watford	2.66	8	22	0.35	14	
Aurora	2.25	9	21	1.01	24	Thunder 20, 24.
Sunshine	2.15	11	16	0.50	12	Thunder 1, 2, 8, 12, 17, 18, 21, 24, 29.
Midland	3.28	11	19	0.84	17	Thunder, 2, 11, 28.
Princeton	1.19	8	22	0.62	25	Thunder 3.
Wilton	3.15	9	21	1.19	18	Thunder 2, 11, 18. Frost 5, 12.
Niagara Falls	2.32	6	24	0.67	29	
Dealtown	2.84	9	21	0.91	24	Heavy frost 20. Ice 21.
North Williamsburg	5.08	11	20	1.83	5	
Deer Park	4.40	8	22	2.38	24	Heavy thunderstorm 24.
Westport	3.87	10	20	1.82	29	Thunder 13, 18, 20, 29. Frost 11, 12, 13, 21. Ice 22.
Wyoming	2.55	8	21	0.70	4	Thunder 1, 7, 19, 24.
Smiths Falls	3.94	7	23	1.15	2	Hard frost and ice, 21, 22.
Oliver's Ferry	2.58	7	23	0.67	2	
Emisdale	6.85	17	13	2.02	23	Thunder 2, 3, 11, 18, 19, 24, 29. Frost 13, 22.
Ursa	4.28	10	20	1.38	2	Thunder 11, 17, 28, 29. Frost, 8, 9, 12.
Scarboro	1.16	10	20	2.40	24	Thunder 2, 20, 26 and 29.
Montague	1.76	9	21	1.39	3	Frost 6, 20.
Huntsville	5.88	8	22	2.80	24	Thunder 2, 11, 24.
Dutton	0.34	2	27	0.25	30	
Leon's Head	2.56	10	20	0.81	24	
NEW BRUNSWICK—						
Point Esquimaux	3.09	10	20	1.04	15	
NOVA SCOTIA—						
Port Morien	2.91	6	24	0.87	30	

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF SEPTEMBER 1904.

	HOURS ENDING															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria			0.15	0.34	0.75	0.78	0.85	0.86	0.91	0.85	0.84	0.86	0.77	0.34		
Nanaimo			0.38	0.66	0.67	0.67	0.64	0.69	0.80	0.80	0.83	0.78	0.79	0.24		
Agassiz			0.04	0.22	0.52	0.65	0.69	0.76	0.75	0.73	0.63	0.51	0.20	0.02		
Battleford			0.15	0.44	0.56	0.66	0.52	0.58	0.55	0.61	0.48	0.43	0.30	0.05		
Indian Head			0.00	0.17	0.50	0.51	0.54	0.58	0.60	0.57	0.54	0.53	0.33	0.02		
Brandon			0.00	0.15	0.40	0.41	0.42	0.52	0.52	0.51	0.50	0.60	0.55	0.33		
Winnipeg			0.30	0.41	0.45	0.47	0.51	0.50	0.48	0.45	0.32	0.18	0.12	0.04		
Woodstock			0.01	0.29	0.48	0.66	0.76	0.77	0.74	0.72	0.67	0.67	0.51	0.12		
Toronto			0.01	0.33	0.46	0.49	0.61	0.71	0.72	0.76	0.74	0.74	0.58	0.27	0.04	
Lindsay			0.16	0.32	0.41	0.47	0.49	0.56	0.55	0.60	0.62	0.54	0.49	0.37	0.08	
Gravenhurst			0.07	0.16	0.46	0.48	0.53	0.62	0.66	0.69	0.71	0.71	0.70	0.48	0.09	
Kingston			0.17	0.44	0.52	0.50	0.43	0.50	0.56	0.61	0.67	0.57	0.39	0.11		
Ottawa			0.03	0.37	0.49	0.47	0.48	0.47	0.41	0.46	0.53	0.55	0.44	0.15		
Montreal			0.11	0.34	0.46	0.50	0.57	0.57	0.50	0.47	0.46	0.47	0.32	0.01		
Quebec			0.10	0.39	0.47	0.43	0.52	0.53	0.50	0.48	0.50	0.45	0.40	0.06		
Fredericton		0.17	0.36	0.49	0.55	0.55	0.59	0.68	0.67	0.69	0.62	0.58	0.36	0.02		

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month. (Constant sunshine being 1.)	0.67	0.63	0.45	0.42	0.39	0.40	0.34	0.51	0.51	0.45	0.51	0.44	0.39	0.44	0.38	0.51
Difference from average.	+0.22	—	+0.14	—0.03	0.00	0.06	—0.13	+0.02	—0.05	0.07		—0.07	—0.04	0.10		—0.05
Maximum daily amount.	0.88	0.88	0.80	0.91	0.80	0.86	0.87	0.80	0.80	0.96	0.90	0.91	0.86	0.96	0.88	0.92
Date	13	12	10	26	21	29	29	30	30	19	12	6	27	6	27	27
No. of days completely clouded.	1	2	6	2	6	5	8	1	2	4	3	2	5	4	8	5

Aurora recorded :—

Where the class of *aurora* is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. St. Peters, III : Prince Albert, III.
3. St. Peters, III : Prince Albert, III.
5. Foxleigh, St. Peters, III : Morden, Aweme, I : Lost Mountain, Midland, Swift Current, IV : Haileybury, IV.
6. Cape Chatte, III : St. Peters, IV : Bowsman, IV : Savanne, White River, II : Minnedosa, II.
7. Truro, IV : Haileybury, IV.
8. Chicoutimi, Cape Chatte, IV : Truro, IV.
9. Cape Chatte, II : Estevan, Aweme, IV : Swift Current, IV : Father Point, III : Truro, IV.
10. Aweme, II : Edmonton, II : Swift Current, IV.
- 11. Pictou, Truro, IV.
12. Hillsdown, IV : Gray Hill, IV : Bowsman, IV : Father Point, III : Haileybury, III.
13. Edmonton, IV.
14. Moose Jaw.
15. Lloydminster, III.
17. St. Peters, IV.
21. St. Peters, III.
24. Foxleigh, Gray Hill, I : Aweme, II : Lloydminster.
25. Edmonton, IV.

Thunder recorded on :

1. Sunshine, Wyoming, N. Bruce, Birnam, Owen Sound.
2. Georgetown, Westminster, Sunshine, Midland, Warton, Emsdale, Scarboro, Clontarf, Huntsville, Beatrice, N. Gower, Orillia, Bala, Lucknow, Port Doyer, Peterboro, Kinnmount, Paris, Meaford, Agincourt, Point Clark, Brantford, Owen Sound, Montreal, Woodstock, Gravenhurst, Lloydminster, Haliburton, Lindsay, London, Toronto, Saugeen, Port Stanley, Parry Sound.
3. Wooler, Arden, Princeton, Clontarf, Gray Hill, N. Gower, Sutton, Lakeland, Chicoutimi, Brome, Kingston, Montreal, Deseronto.
4. Rapid City, Cartwright, Belmont, Oakdale Park, Almusippi, Foxleigh, Hillsdown, Gatesgarth, Lucknow, Point Clark, Sable Island, Pictou, Truro.
7. Wyoming, N. Bruce.
8. Sunshine, Bruederheim, Gray Hill, Port Stanley.
9. Lost Mountain, Edmonton.
10. Lost Mountain.
11. Midland, Warton, Emsdale, Ursa, Huntsville, Clinton, Bala, Lucknow, Point Clark, Birnam, Owen Sound, Edmonton, Haileybury.
12. Sunshine, Bruederheim, Beaver Hills, E., N. Bruce, Sutton, Swift Current, Yarmouth, Truro.
13. Jernyn.
14. Lansdowne, Westport, Beaver Hills E., Hillsdown, Estevan, Bala, Kingston, Edmonton, Deseronto.
15. Sutton.
16. Jernyn.
17. Sunshine, Emsdale, Ursa, Beatrice, Meaford, Bruce Mines, Cockburn Island, Bermuda.
18. Sunshine, Warton, Westport, Clontarf, Foxleigh, Indian Head, Beatrice, Clinton, N. Bruce, Bala, Sutton, Lucknow, Meaford, Point Clark, Owen Sound, Haliburton, Brome, Moneton, Saugeen, bail, Parry Sound, Montreal, Quebec, Shawinigan Falls.
19. Arden, Wyoming.
20. Georgetown, Wooler, Lansdowne, Aurora, Westport, Scarboro, Clontarf, Bala, Lucknow, Agincourt, Point Clark, Birnam, Owen Sound, Brome, Lindsay, London, Toronto, Port Stanley, Montreal, Quebec, Shawinigan Falls, Haileybury.

21. Sunshine, Sutton, Peterboro, Sable Island, Halifax, Truro.

22. Jermyn, Rat Portage.

23. Beatrice, Cockburn Island.

24. Croydon, Georgetown, Wooler, Aurora, Sunshine, Wyoming, Emsdale, Scarboro, Clontarf, Huntsville, Clinton, Sutton, Lucknow, Lakefield, Meaford, Agincourt, Birnam, Owen Sound, Haliburton, Lindsay, Toronto, Saugeen, Port Stanley, Bermuda, Gravenhurst.

25. Westminster, N. Bruce, Peterboro.

26. Peterboro, Point Clark, London, Port Stanley.

27. Regina, Oakbank, Foxleigh, Abernethy.

28. Midland, Ursa, Rapid City, Belmont, Regina, Almasippi, Treherne, Abernethy, Grenfell, Moose Jaw, Bruce Mines, Cockburn Island, Barnardo, Qu'Appelle, Winnipeg.

29. Fxbridge, Wooler, Arden, Orangeville, Sunshine, Westport, Emsdale, Ursa, Scarboro, Regina, Lost Mountain, Bala, Sutton, Stony Creek, Lakefield, Peterboro, Kinnmount, Port Hope, Meaford, Bruce Mines, Agincourt, Brantford, Owen Sound, Haliburton, Renfrew, Lindsay, Toronto, Port Stanley, Quebec, White River, Gravenhurst, Shawinigan Falls.

30. Arden, Grand Manan, Gravenhurst.

FORECASTS FOR SEPTEMBER, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1078. These was divided as follows :—

District.	No. Issued.	VERIFIED.			Per- centage
		No. Fully	No. Partly	No. Not	
Manitoba	86	66	16	4	86.0
Lake Superior	109	71	26	12	77.1
Lower Lake Region	114	90	14	6	88.6
Georgian Bay	111	39	9	6	39.8
Ottawa Valley.	101	72	21	8	81.7
Upper St. Lawrence	102	76	19	7	83.8
Lower St. Lawrence.	110	69	26	15	74.5
Gulf, &c.	112	84	16	12	82.1
Maritime Provinces, West	115	77	25	13	77.8
Maritime Provinces, East.	115	84	22	12	80.0
Total	1078	789	194	95	82.2

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto,
26th October, 1904.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

OCTOBER, 1904



INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather in British Columbia was somewhat dull and mild and exceedingly dry excepting at a very few places where on the contrary it was wetter than usual. Over the Lower Mainland the weather was mostly fair during the first ten days after which the rain was frequent up to and including the 18th. From the 19th to 28th it was mostly fair and the last three days of the month were quite wet. The daily maximum temperatures were generally between 50° and 60° and the daily minimum between 40° and 50° throughout the month. Over the upper Mainland, although the total precipitation was small, showers were frequent from the 6th to the 20th, also on the last two or three days; and until after the 16th there was not much sunshine. Frosts were frequent on the higher levels and by the 31st most of the trees were denuded of leaves.

In the North-West Territories the weather was unusually mild and in most districts the precipitation was light; in some localities, however, there was much rain and some snow. During the first week exceedingly dull weather prevailed accompanied by occasional rain or snow, after which there was much bright sunshine, and with the exception of rain at some places about the 17th and 21st it was generally fair to the end of the month. Temperatures well below the freezing point were frequent, nevertheless 60° was often recorded during the day at stations in Alberta and between 50° and 60° in other portions of the Territories.

In Manitoba the weather was similar to that in the Territories, it being mostly mild and dry. In this province, however, there was much less sunshine, and in eastern districts it was considerably below the average. The dates upon which rain fell varied considerably with the district, but showers were frequent up to the 20th, after which much finer weather prevailed to the end of the month. Frosts were frequent but they were mostly light, and temperatures between 50° and 60° occurred almost daily from the 2nd to 7th and 22nd to 27th when exceedingly cool weather prevailed.

In Ontario the weather was exceedingly cool and rather dry, whilst the amount of sunshine differed little from the average. Up to the 12th clouded skies with rain were frequent, after which there was much fine, bright weather to the 20th when a somewhat wet period set in, lasting five or six days. On or about the 28th it again turned fine and continued so to the end of the month. Frosts at night were frequent in most localities and on or about the 7th, when the temperature fell at many places to 26° or lower, plants and trees still green were quickly withered, and most of the latter were stripped of their leaves. On the night of the 26th light snow was recorded at many stations.

In the province of Quebec the weather was generally cool and dry, excepting in a few isolated districts, where on the contrary the precipitation exceeded the average. Much cloudiness prevailed and in some localities showers, though mostly light, were frequent. Light frosts occurred after the 10th but the temperature frequently exceeded 50° during the day in western districts and about the 20th and 21st 60° was exceeded. The trees were quite bare by the 31st.

In most districts in New Brunswick there was much dry weather but with this exception the departures from the normal were unimportant. In the vicinity of Dalhousie and Sussex the precipitation was exceedingly heavy, elsewhere, however, it was light. From the 6th to 14th and about the 23rd and 27th showers were frequent in most districts, rain also being recorded on the other dates at some stations. No gales of importance were reported. Light frosts were recorded occasionally but many trees retained their leaves until late in the month.

The weather in Nova Scotia was mostly cool and dry, excepting in the vicinity of Port Hastings where on the contrary the mean temperature was $5^{\circ}.3$ above the average. Rain occurred frequently during the first three days, also from the 6th to 15th and about the 23rd, 27th and 30th much fine, bright weather being recorded during the intervening periods. Light frosts were reported from some stations about the 8th, also during the last week, and snow flurries were noted at a few places on the 7th. The trees were denuded of leaves late in the month.

In Prince Edward Island the weather was somewhat cooler and drier than usual, and there was much cloudiness. Rain occurred about the 1st and 2nd, from the 11th to 14th, 22nd and 23rd, also on or about the 26th. Fine bright weather was general from the 16th to 21st and on a few days previous to and subsequent to these dates. Light frosts were frequent after the first week but the day temperatures were mostly between 50° and 60° , excepting from the 13th to 17th and 28th to 31st when the weather was quite cool.

F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for October reached or exceeded the average amount throughout the whole Dominion. The largest excess, 0.14 of an inch, occurred at Banff, Alta.

HIGH AREAS.

Nine areas of high pressure were charted during the month, many of the number being of considerable importance. Two first appeared to the northward of Manitoba, three in the North-West Territories and the remainder moved into the Continent across the North Pacific States Coasts. The general drift of the areas was over the Lake Region and thence southward when they either broke up or passed well to the southward of the Maritime Provinces, Nos. 3 and 4, which progressed far to the northward and thence over the Maritime Provinces, proving the exception to the rule. No. 4, which traversed Canada between the 4th and 8th, was probably the most energetic area of the series, and during its presence sharp freezing weather was experienced in all portions of the Dominion, minima of 16° and 18° occurring in the Territories and Manitoba and from 6 to 10 degrees of frost elsewhere.

LOW AREAS.

Twelve areas of low pressure were sufficiently well defined during the month to be charted, but as a rule they were not energetic and seldom accompanied by much precipitation. Two depressions broke up after reaching the Lake Region, another one had its origin over the Middle Atlantic States and a fourth over Northern Maine.

Area No. 3, which first appeared over the Middle Pacific States, brought copious rainfalls to Ontario, Quebec and the Maritime Provinces, but its accompanying gales were not severe. No. 6, an Atlantic disturbance passing well to the eastward of Nova Scotia, caused the heaviest gale of the month in the Maritime Provinces, occurring on the 15th. Nos. 8 and 9, the former from the southward of Jamaica and the latter from the neighbourhood of New Mexico united in the Ottawa Valley on the 22nd. These systems were responsible for the heaviest gale of the month in the Lake Region as well as in the Lower St. Lawrence Valley and the Gulf of St. Lawrence.

BRIGHT SUNSHINE.

Bright sunshine was slightly below the average at all station except at Brandon and Indian Head, where there was a small excess. The percentage of possible duration ranged from 43 at Indian Head, Battleford and Toronto to 25 at Nanaimo and 20 at Agassiz.

WINDS.

In British Columbia, over Vancouver Island and on the Mainland the winds were largely light to moderate and variable. On two occasions strong and on twelve days fresh breezes were recorded.

In the North-West Territories the westerly direction was the most general, with six days of strong and twelve days of fresh breezes.

In Manitoba no one direction was paramount. There were three days with strong and nineteen with fresh breezes as well as two gales.

In the Lake Region the direction was likewise largely variable, with four days of strong and eleven of fresh breezes and six gales, the latter occurring on the 1st, 5th, 10th, between the 20th and 21st, between the 24th and 25th, and on the 26th. None of the storms, however, were of much violence.

In the Ottawa and Upper St. Lawrence Valleys the westerly direction was more in evidence than any other. There were seven days with strong and eleven with fresh breezes, also three gales.

In the Lower St. Lawrence Valley and the Gulf the direction was chiefly westerly, with nine days of strong and eleven of fresh breezes and five gales, the latter occurring between the 1st and 2nd, 6th, 10th, 15th and 21st.

In the Maritime Provinces the direction was mainly between the northwest and southwest, with eleven days of strong and nine of fresh breezes and five gales, the latter occurring on the 1st, 10th, 15th, 21st and 27th.

The gales were successfully warned over all districts, but warnings sent to Lake Superior on the 7th, and to the St. Lawrence districts on the 26th, were not justified by subsequent dangerous winds.

TEMPERATURE.

The mean of October temperature was higher than the average over Western and Northwestern Canada from the Pacific coast to the eastern limits of Manitoba, and it was below in Ontario, Quebec and the Maritime Provinces. The positive departures was almost uniformly 3° or 4° from Winnipeg westward to the mountains, and from 1° to 3° in British Columbia. The largest negative departures were 3° or 4° in the more central portions of Ontario, while in other parts of that province and in Quebec and the Maritime Provinces the departure was very generally from 1° to 2° lower than the average.

The highest and Lowest temperatures in each Province during October, 1904, were:

British Columbia,	80° ·4 on 2nd at Tobacco Plains,	11° ·0 on 7th at Stuart Lake,
N. W. Territories,	85° ·8 on 2nd at Lethbridge,	9° ·0 on 28th at Knee Hill,
Manitoba,	73° ·0 on 1st at Virden,	12° ·0 on 6th at Bowsman,
Ontario,	80° ·0 on 18th at Cottam,	10° ·0 on 12th at White River,
Quebec,	70° ·7 on 21st at Father Point,	15° ·6 on 31st at Sherbrooke,
New Brunswick,	71° ·5 on 21st at Chatham,	18° ·5 on 28th at St. Stephen,
Nova Scotia,	71° ·6 on 21st at Truro,	18° ·5 on 29th at Truro,
Prince Edward Island,	66° ·0 on 22nd at Hamilton,	26° ·2 on 31st at Charlottetown,

PRECIPITATION.

A little over an inch of rain fell during the month in Alberta and about half this amount in other parts of the Territories. In Manitoba the fall was somewhat greater, being one and a half inches at Winnipeg and more further east. In British Columbia the fall was very generally less than average. In Ontario the distribution of rain was very irregular: in New Ontario, including Algoma and Rainy River Districts, the average was exceeded, as it also was in a district including the higher lands east of Lake Huron, while in other portions of the province it was deficient and especially so in the portion extending from the eastern half of Lake Ontario north to the Ottawa. In Quebec there were no important differences from average, while in the Maritime Provinces there was a small deficiency.

PRESSURE, TEMPERATURE, WIND AND PRECIPITATION AT STATIONS IN THE DOMINION OF CANADA, OCTOBER, 1901.

* Stations not furnished with Registering Thermometers.

[illegible]

Orilla	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
St. Catharines	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54																																														

PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
OCTOBER, 1904.

STATION	RAIN FALL					SNOW FALL					REMARKS
	Amount in inches	No. of Days, or or Over	No. of Fair Days	Heaviest Fall in Month	Date	Amount in inches	No. of Days	Heaviest Fall in Month	Date		
BRITISH COLUMBIA	in.			in.		in.		in.			
Nasas Harbour	10.62	16	15	1.49	17						
Snake Lake	1.92	19	11	0.65	11						
Goldstream Lake	2.55	19	12	0.89	31						
Nanaimo	2.31	9	22	0.67	31					Fog 1, 31.	
Alberni	5.82	12	19	1.43	16						
Cowichan	4.50	11	17	0.92	31					Fog 28.	
Royal Oak	1.62	9	22	0.83	31						
Port Essington	20.75	23	8	3.55	21						
N. W. TERRITORIES											
Last Mountain	0.41	3	1	0.35	3						
Beaver Hills, W.	1.20	5	26	0.90	2	0.5	1	0.5	3		
Arlington Beach	0.70	1	30	0.70	2						
Stirling			28			7.0	3	6.0	7		
Regina	0.31	1	26	0.22	2						
Lacombe	0.20	1	28	0.20	3	1.0	2	1.0	5		
Beaver Hills, E.	1.55	3	28	1.55	2, 3						
Dun Hills	1.37	7	21	0.73	3						
MANITOBA											
Delor, in.	0.36	3	28	0.43	3					Fog 11.	
Rapid City	0.30	1	17	0.39	7		6		—	Thunder 20; fog 11, 14, 15, 27, 30.	
Belmont	0.15	3	28	0.06	7		1				
Gretna	0.53	4	22	0.47	17	0.5	3	0.5	25		
Rathwell	1.44	11	17	0.95	17		3				
Norquay	0.65	5	23	0.31	17	1.0	2	1.0	25		
Beaver	0.79	3	28	0.46	7						
ONTARIO											
Dutton	1.68	3	25	0.90	11		1			Thunder 11.	
Ersa	2.98	11	20	0.67	21		1			Aurora 6.	
Emmetsville	1.40	6	25	0.65	22		1			Ploughing stopped by frost.	
Waukegan	2.45	5	25	1.10	5		1			Thunder 5, 8, 11.	
Wooder	1.54	8	22	0.42	21		1				
Lansdowne	0.85	3	26	0.58	21		1				
Lybridge	2.09	10	21	0.50	22		1				
Jermyn	1.35	6	24	0.36	21						
Emsside	2.28	11	20	0.41	5		2			Aurora 13, 14.	
Croydon	1.18	1	26	0.25	5		2				
Georgetown	2.42	11	19	0.17	9		2			Aurora 5, 6, 7, 13, 14.	
Patna	1.52	6	25	0.50	22						
Sunshine	2.93	10	20	1.00	10	2.0	2	2.0	27	Thunder 10, 11.	
Lions Head	1.69	9	22	0.50	22		1				
Smith's Falls	1.79	6	21	0.95	8		1				
Deer Park	2.49	9	21	0.71	22		1			Thunder 10.	
Sydenham	1.97	1	27	1.00	21						
Westport	1.53	6	23	0.68	21	1.0	2	1.0	27		
Midland	2.19	8	22	0.70	26					Aurora 6, 13.	
Princeton	2.49	9	21	1.48	13					Thunder 8, 22.	
Niagara, S.	1.91	1	27	0.54	21						
Watford	2.00	11	20	0.37	5		2				
Watford	2.44	6		0.81	4						
Smith's Falls	1.54	5	26	0.62	22	0.5	1	0.5	27		
Arden	1.14	13	18	0.30	6	1.0	2	1.0	27		
Godolphin	1.42	6	21	0.40	22	1.0	1	1.0	26		
Aurora	2.04	10	20	0.58	10	0.3	1	0.3	27		
Scarboro	2.51	8	19	0.79	22		2			Thunder 8, 9, 10.	
Oliver's Ferry	1.05	5	25	0.43	21	1.0	1	1.0	27		
Westminster	2.17	6	21	0.65	10		2				
Orangeville	2.39	9	20	0.61	10	2.0	2	1.1	26		
NEW BRUNSWICK											
Port Essington	1.93	14	17	0.82	27						
NOVA SCOTIA											
Port Morden	1.59	7	21	0.52	11						

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF OCTOBER, 1904

	HOURS ENDING															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria			0.00	0.12	0.25	0.32	0.42	0.37	0.36	0.42	0.57	0.31	0.18	0.00		
Nanaimo				0.13	0.20	0.25	0.28	0.25	0.31	0.38	0.34	0.37	0.17	0.00		
Agassiz				0.02	0.21	0.31	0.20	0.31	0.36	0.32	0.25	0.09	0.02	0.00		
Battleford			0.02	0.19	0.46	0.50	0.62	0.59	0.55	0.51	0.53	0.37	0.12	0.00		
Indian Head				0.01	0.41	0.51	0.56	0.65	0.63	0.60	0.62	0.54	0.17	0.00		
Brandon				0.06	0.23	0.27	0.36	0.48	0.52	0.61	0.58	0.58	0.43	0.18		
Winnipeg			0.02	0.13	0.25	0.34	0.36	0.34	0.38	0.34	0.29	0.16	0.06	0.00		
Woodstock				0.12	0.36	0.44	0.45	0.41	0.38	0.45	0.45	0.39	0.18	0.00		
Toronto				0.19	0.50	0.64	0.55	0.56	0.55	0.51	0.52	0.41	0.26	0.03		
Lindsay			0.05	0.26	0.44	0.49	0.56	0.49	0.41	0.41	0.45	0.40	0.34	0.06		
Gravenhurst				0.09	0.35	0.47	0.45	0.42	0.54	0.58	0.55	0.47	0.40	0.06		
Kingston			0.01	0.28	0.46	0.46	0.45	0.43	0.45	0.41	0.38	0.38	0.21	0.01		
Ottawa				0.11	0.35	0.39	0.41	0.42	0.45	0.36	0.39	0.34	0.21	0.00		
Montreal				0.10	0.26	0.38	0.41	0.42	0.45	0.47	0.39	0.33	0.10	0.01		
Quebec				0.03	0.27	0.37	0.43	0.44	0.41	0.38	0.40	0.41	0.38	0.21	0.00	
Fredericton				0.03	0.23	0.42	0.43	0.49	0.49	0.52	0.52	0.54	0.52	0.40	0.06	

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month (Constant sunshine being 1.)	0.29	0.25	0.20	0.43	0.43	0.40	0.25	0.33	0.43	0.40	0.40	0.36	0.32	0.35	0.35	0.42
Difference from average.	-0.08	—	-0.09	-0.04	+0.06	+0.01	-0.12	-0.07	+0.00	-0.01	—	-0.05	-0.04	0.06	—	-0.02
Maximum daily amount	0.90	0.89	0.71	0.86	0.87	0.97	0.80	0.91	0.88	0.97	0.87	0.90	0.83	0.98	0.91	0.95
Date	25	24	27	10	25	27	1	30	18	15	15	15	15	30	16	16
No. of days completely clouded.	8	8	11	4	4	4	14	10	3	6	8	10	8	10	9	6

Aurora recorded :—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. Truro, IV.
5. Gravenhurst, IV; Aweme, III; Bowsman, IV; Hillview, I; Foxleigh, St. Peters, II; Rapid City, Georgetown, IV; Truro, IV; Haileybury, IV.
6. Gravenhurst, II; Lucknow, II; Cockburn Island, Cartwright, I; Aweme, I; Bowsman, IV; Morden, Foxleigh, St. Peters, I; Grenfell, N. Beaver Hills, II; Rapid City, Ursa, Georgetown, II; Midland, Montreal, Toronto, IV; Parry Sound, III; Quebec, II; Minnedosa, II; Prince Albert, IV; Renfrew, Haileybury, III.
7. Fredericton, IV; Stony Creek, St. Peter, IV; Georgetown, Truro, IV; Father Point, II; Kingston, III; Quebec, IV; Minnedosa, I; Prince Albert, IV; Edmonton, III; Charlottetown, IV; Grand Manan, IV; Haileybury, I; Sherbrooke, III.
8. Birnam, III; Edmonton, II.
9. Cape Magdalen.
10. North Bruce, St. Peters, III.
10. Bowsman, IV; Haileybury, III.
13. Gravenhurst, III; North Bruce, Meaford, Stony Creek, Lucknow, IV; Savanne, Brantford, IV; Bowsman, IV; Chicoutimi, Lloydminster, IV; Hillsdown, IV; St. Peters, I; Emsdale, III; Georgetown, IV; Midland, Parry Sound, III; Quebec, IV; Swift Current, III; Haileybury, IV; Victoria, Alta, IV; Threehills Creek, IV.
14. Gravenhurst, III; Port Burwell, Sutton, Meaford, Birnam, IV; Chicoutimi, Emsdale, IV; Georgetown, IV; Toronto, IV; Renfrew, Haileybury, III.
15. Sutton, Cape Magdalen, Hillsdown, IV; St. Peters, IV; Haileybury, III.
18. Truro, IV.
21. Morden, Prince Albert, IV; Haileybury, III.
22. Victoria, Alta, IV.
24. Kitamaat.
26. Grey Hill, IV; Bella Coola.
27. Threehills Creek, III.
29. St. Peters, I; Rapid City, Edmonton, IV.
30. Aweme, III; Treherne, Morden, St. Peters, I; Gray Hill, IV.
31. Rat Portage, IV; St. Peters, I.

Thunder recorded on :

1. Brome, Grand Manan.
3. Quesnel, Banff.
4. Birnam, Owen Sound.
5. Gravenhurst, North Bruce.
6. Sutton.
7. Alberni.
8. London, Clinton, Lucknow, Brantford, Paris, Agincourt, Wyoming, Georgetown, Princeton (Ont.), Scarboro', Toronto, Nanaimo, Alton.
9. Lucknow, Agincourt, Scarboro', Toronto, New Westminster.
10. Lindsay, London, Sarnia, Lucknow, Birnam, Brantford, Agincourt, Aurora, Port Hope, N. Nicomen, Uxbridge, Sunshine, Deer Park, Scarboro', Westminster, Toronto, Port Stanley, Deseronto.
11. Sutton, Dutton, Wyoming, Sunshine.

13. Savanne.
16. Rat Portage, Morden.
17. Winnipeg, Stony Mountain.
18. Brome.
20. Rapid City, Ursa, Port Stanley.
21. Lindsay, London, Stony Creek, Lucknow, Brantford, Port Stanley, Saugeen.
22. Port Burwell, Wyoming, Princeton (Ont.).
26. St. John.
27. Sussex, Bermuda.
29. Bermuda.
30. Bermuda.

FORECASTS FOR OCTOBER, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1089. These was divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Per- centage
Manitoba.	88	68	16	4	86.4
Lake Superior	105	86	16	3	89.5
Lower Lake Region	116	96	18	2	90.5
Georgian Bay.	116	97	15	4	90.1
Ottawa Valley.	106	81	20	2	88.7
Upper St. Lawrence	106	87	17	2	90.1
Lower St. Lawrence.	114	79	25	10	80.3
Gulf...	117	81	20	16	77.8
Maritime Provinces, West	111	80	24	7	82.9
Maritime Provinces, East.	110	78	25	7	82.3
Total . . .	1089	836	196	57	85.8

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto,
26th November, 1904.

Monthly Weather Review.

VOL. XXVIII.

NOVEMBER, 1904.

No. 11.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather for November in British Columbia was exceedingly mild and dry and there was somewhat less bright sunshine than usual. Over the lower mainland rain occurred frequently, more especially from 1st to 7th, 13th to 22nd and 26th to 30th, but the falls were mostly quite light. Frosts occurred occasionally during the month, but in most districts they were light and many plants were in bloom on the 30th. Over the upper mainland rain was much less frequent than in districts near the Coast and little was recorded during the first two weeks. From the 15th to 27th, light falls of rain or snow occurred almost daily, after which fair weather prevailed. In the higher ranges frosts were frequent and in some localities there was snow. On the 30th a few hardy plants were still in bloom in the mountains.

In the North-West Territories the weather was exceedingly mild and dry up to about the 23rd, when a marked drop in the temperature occurred and it then remained cold and wintry to the end of the month. There was much bright sunshine and with the exception of some light showers at a few places on or about the 5th precipitation was not recorded until the 22nd and five succeeding days when occasional showers of snow were reported.

In Manitoba, as in districts immediately to the westward, the weather was exceptionally fine, mild and dry, precipitation being completely absent in some places and only occurring in most localities on or about the 9th, 24th, 28th and 29th. Frosts at night were frequent but the day temperatures often exceeded 50° up to the 24th when the weather became quite wintry and continued so to the 30th. Rivers were frozen over on or about the 25th.

In Ontario the weather was phenomenally dry, somewhat cold and there was much bright sunshine throughout the month. At most places precipitation was not recorded until the 19th, and sunshine was almost continuous during this period. On or about the 19th, and occasionally from the 24th to 30th rain or snow occurred, but from some stations an inappreciable quantity only was reported during the month. On or about the 26th and for several days following, the weather was quite cold, and in western counties, where, in many places, there was snow on the ground to a depth of six to twelve inches and good sleighing, it was quite wintry.

The weather in the Province of Quebec was unusually cold and dry and somewhat dull, and there was a marked absence of high winds and gales. The precipitation which was chiefly snow varied with the district, there being little after the 12th in some places, whilst in others light falls were frequent throughout the month. Frosts occurred almost every night, but the day temperatures generally exceeded 32° until about the 26th when more wintry conditions prevailed.

In New Brunswick the weather was somewhat colder and dryer than usual and there was much cloudiness. From the 1st to 13th, although rain occurred about the 4th, there was much fine weather. On or about 14th, 20th and 25th rain or snow was also recorded and the intervening periods were mostly fair. Frosts occurred almost nightly and on the 29th the temperature fell to or below zero at some places. The depth of snow on the ground on the 30th was three inches in southern districts and somewhat more in the northern portion of the Province.

In Nova Scotia the weather was exceedingly cool and in most localities it was unusually dry, excepting over a portion of Cape Breton where on the contrary the precipitation exceeded the average. Clouded skies were somewhat frequent, but there were many fine bright days, more especially

from the 1st to 3rd, 9th to 13th, and 26th to 30th. Although the temperature during the day often exceeded 40° frosts were recorded almost every night. Several gales were reported, the most severe occurring on the 6th, 14th and 15th, when some exceedingly high wind velocities were noted.

The weather in Prince Edward Island was somewhat cool and wet, and exceedingly dull and changeable. From the 1st to 13th the daily maximum temperatures were generally below 40° after which it became milder and on the 20th 60° was exceeded. On the 26th colder weather again prevailed and continued to the 30th, when higher temperatures were recorded. The precipitation was almost altogether rain and on the 30th the ground was bare and the harbours and rivers were free of ice.

F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for November exceeded the average amount over Eastern Assiniboia, Manitoba, New Ontario, and also locally over Northern British Columbia; elsewhere in Canada it was deficient. Negative departures were pronounced, Halifax being 0.21 of an inch below the normal value.

HIGH AREAS.

Six areas of high pressure were charted. The first appeared to the northward of Lake Superior, and one in Northern Saskatchewan. The remainder were first in evidence on the coasts of the Middle Pacific United States. The system which passed into Northern California on the 2nd was unusually persistent and after shifting backwards and forwards over the western portion of the continent during the first part of the month, it eventually broke up on the 16th over Tennessee, the Carolinas and Georgia. The area which moved into the Lake Superior district on the 15th was remarkable for the very cold weather accompanying it during its course over Eastern Ontario and the Province of Quebec.

LOW AREAS.

Fifteen areas of depression were sufficiently well defined to be charted, the continuous drift of depressions into the continent from the British Columbia coasts being very noticeable, also a less numerous drift of areas up the United States Atlantic seaboard from the neighbourhood of the Florida coasts. Many of the Pacific depressions passed over the North-West Territories far to the northward and did not reach the Lake Region, whereas the Atlantic depressions invariably increased in energy as they progressed northward, causing very stormy conditions on the North Atlantic Ocean as well as in our Maritime Provinces and over the Gulf of St. Lawrence. The area which appeared to the southward of Florida on the 12th and swept over the Maritime Provinces on the 14th was a storm of unusual violence with a remarkably low barometric reading. Another disturbance of note was the one which was situated near Florida on the 22nd and swept over the Maritime Provinces between the evenings of the 24th and 25th. The stormiest weather of the month in Ontario was brought by a disturbance which passed into Northern British Columbia from the Pacific Ocean on the 26th, and reached the Lake Region on the 29th.

WINDS.

In British Columbia, on Vancouver Island and over the Mainland the direction was chiefly easterly to southerly with seven days of strong and ten of fresh breezes as well as five gales, several of the latter being of considerable severity.

In the North-West Territories the south and west direction predominated with eleven days of strong and eleven days of fresh breezes and one gale.

In Manitoba the direction was mostly from the north-west, west and south-west with eleven days of strong and eleven days of fresh breezes and two gales.

In the Lake Region the direction was likewise mainly between the north-west, west and south-west quadrants, with nine days of strong and nine of fresh breezes and five gales, the latter occurring on the 12th, 13th, 20th, between the 23rd and 24th, and on the 29th, the last-mentioned being the heaviest storm of the series, although of no marked intensity.

In the Ottawa and Upper St. Lawrence Valleys the north and west directions were paramount with four days of strong and sixteen of fresh breezes and three gales.

In the Lower St. Lawrence Valley and the Gulf the north and west directions chiefly prevailed with six days of strong and twelve of fresh breezes and four gales, the latter being experienced between the 6th and 7th, the 14th, 18th and between the 24th and 25th. The storms were all of considerable force, that of the 14th, however, being the most severe.

In the Maritime Provinces also the north and west directions were most frequent with eleven days of strong and nine of fresh breezes and five gales, the latter occurring on the 6th, 14th, 18th, between the 24th and 25th, and on the 29th, the storm of the 14th being exceptionally severe.

The gales of the 6th and 18th, in the Gulf of St. Lawrence and in the Maritime Provinces, and the gale of the 12th on the Lakes were not warned and a warning issued to the Lake Stations on the 4th, and another one to the Gulf of St. Lawrence on the 29th, were not justified by subsequent dangerous winds.

BRIGHT SUNSHINE.

Bright Sunshine was below the average at Kingston, Montreal and Fredericton and at all British Columbia stations, elsewhere it was everywhere above, the excess being very noticeable in the North-West Territories and Manitoba and also in many portions of Ontario. The percentage of possible duration was 48 at Brandon, 44 at Battleford and Winnipeg and 42 at Indian Head and Toronto. Montreal had 22 per cent, Victoria 16, Nanaimo 13 and Agassiz 11.

TEMPERATURE.

The temperature was below the average in Ontario from the Georgian Bay and Lake Huron eastward, and throughout Quebec and the Maritime Provinces; elsewhere it was everywhere above the average. The negative departures varied from average to 3° below in Ontario from the shores of Lake Superior to the Eastern boundary and from 2° to 4° below in Quebec and the Maritime Provinces. The positive departures were excessive, ranging from 1° on the eastern shores of Lake Superior to 13° and 14° in Manitoba, attaining to as much as 15° and 16° in the western parts of Saskatchewan and Assiniboia, and then gradually diminishing to 6° on the British Columbia Coast and over Vancouver Island.

The highest and Lowest temperatures in each Province during November, 1904, were:

British Columbia,	69° 50 on 10th at Clayoquot,	55° 50 on 24th at Big Creek.
N. W. Territories,	71° 57 on 13th at Lethbridge,	—24° 5 on 29th at Athabasca Landing.
Manitoba,	73° 50 on 2nd at Aweme,	—17° 50 on 30th at Bowsman.
Ontario,	71° 50 on 1st at Cottam,	—19° 50 on 18th at Rockliffe.
Quebec,	51° 58 on 3rd at Montreal,	—0° 56 on 29th at Brome.
New Brunswick,	50° 50 on 3rd at St. John,	—0° 55 on 29th at Fredericton.
Nova Scotia,	57° 55 on 25th at Sydney,	41° 55 on 29th at Parrsboro.
Prince Edward Island,	67° 50 on 20th at Hamilton,	12° 50 on 28th at Hamilton.

PRECIPITATION.

The precipitation was below the average in all portions of the Dominion, except in Prince Edward Island and Cape Breton. Charlottetown, in the former district, recording a positive departure of 1.6 inches, and Sydney in the latter, 2.7 inches. The deficiency was very remarkable over Ontario and the greater portion of Quebec, particularly so in the more southern portions of Ontario, where the fall for the month was almost nil. Brantford reports a few snow flurries only, and Toronto with 0.11 of an inch, registers the driest November on record, the next driest being 1894, with 0.61 of an inch. Montreal and Quebec were each over two inches and a quarter below the average amount, and Father Point half an inch below. In Manitoba and the Territories, the precipitation, which was chiefly snow, was also extremely light. British Columbia likewise was very deficient in precipitation, Cariboo recording two and a quarter inches less than the average amount, and Victoria more than an inch and a half less.

At the close of the month a light covering of snow was reported on the ground over the greater portion of the North-West Territories and Manitoba, as well as in many parts of Quebec. In Ontario, along the shores of Lake Superior, the ground was covered to a depth of from three to five inches, and in the Georgian Bay Region and locally elsewhere from three to nine inches. In the neighbourhood of Collingwood, however, the depth is reported to be as much as eighteen inches. Northern New Brunswick was also covered to a depth of several inches.

Orillia	11	31	79	24	77	33	17	1	12	51	40	8	0	5	16	6	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
NOVEMBER, 1904.

STATION	RAIN FALL					S N O W F A L L					REMARKS
	Amount in inches	No. of Days, or Over	No. of Fair Days	Heaviest Fall in Month	Date	Amount in inches	No. of Days	Heaviest Fall in Month	Date		
	in.			in.		in.		in.			
BRITISH COLUMBIA											
Port Essington	17.52	28	2	1.58	4	*					
Goldstream Lake	13.00	25	5	2.60	19						
Sonias River	24.31	24	6	2.79	19						
Royal Oak	7.69	23	7	1.74	18						
Nanaimo	11.18	21	9	1.91	19						Fog 8, 9, 10, 11.
Sooke Lake	14.33	21	9	2.04	19						
Nass Harbour	11.69	19	10	2.00	16	3.0	1	3.0	18		
Cootnam	11.25	15	15	2.33	19						
N. W. TERRITORIES											
Victoria	R	0	25	R	8	3.3	4	2.0	27	First snow 23.	
Regina						1.3	3	0.8	24	First snow 9.	
Beaver Hills, W.						6.1	5	5.5	30	Aurora 4, 5.	First snow 23.
Bruderheim						0.5	3	0.4	28	First snow 23.	
Lacombe						2.0	4	2.0	24	First snow 24.	
Dirt Hills						2.5	2	2.0	30	First snow 28.	
Stirling			27			6.0	3	6.0	12-14	First snow 12.	
Innisfail			28			2.5	2	2.0	21		
Lost Mountain						0.4	1	0.4	23		
MANITOBA											
Norquay						4.5	3	2.5	24		
Rapid City						4.5	9	3.0	24	Aurora 4, 5, 7, 16, 17, 18, 30.	
Belmont							3				
Greta						2.8	3	1.2	24		
Deloraine						2.3	3	1.0	9	Aurora 5.	
Rathwell	0.20	1	25	0.20	9	8.5	5	5.0	9		
ONTARIO											
Emmetsville	R		27	R	20	2.0	1	2.0	28		
Lion's Head	0.56	4	21	0.29	20	12.0	5	4.0	26	Thunder 20.	
Westminster	R		26	R	20	9.0	3	6.0	26		
Smiths Falls	0.39	1	28	0.39	20	1.0	1	1.0	30	Thunder 20.	
Ursa	1.89	5	22	0.87	19	8.0	3	4.0	29	Thunder 19.	
Montague	0.27	1	27	0.27	20	1.0	2	1.0	25		
Midland	1.04	5	20	0.80	19	5.5	6	2.0	31	Thunder 19.	
Emisdale	1.04	3	24	0.70	20	6.3	6	2.0	29	Thunder 19.	
Jernyn	0.42	1	26	0.42	20	2.0	3	2.0	27		
Parnia	0.22	2	27	0.42	25	3.0	2	2.0	27		
Arden	0.67	7	22	0.03	21	8.0	1	5.0	25	Thunder 20, 21.	
Watford	0.25	1		0.25	1						
Aurora	0.03	1	24	0.03	1	1.7	5	0.8	28		
Princeton	0.17	2	27	0.42	20	4.0	1	4.0	26		
Goderich	0.80	3	22	0.40	5	8.5	5	3.0	27		
Georgetown	0.25	4	21	0.18	20	2.3	5	0.6	26	Aurora 5, 14.	Thunder 19.
Uxbridge	0.06	1	26	0.06	19	2.5	3	1.0	26	Thunder 19.	
Sunshine	0.56	2	24	0.24	21	16.5	7	9.0	27		
Niagara Falls	0.05	1	28	0.05	20	0.5	1	0.5	—		
Oliver's Ferry	0.33	1	27	0.33	20	3.0	2	2.0	24		
Dutton	R	0	25	R	5	1.0	4	1.0	25		
Deer Park	0.13	1	26	0.03	20	0.3	3	0.3	30	Thunder 20.	
Croydon	0.25	1	27	0.25	21	4.0	2	4.0	25	Thunder 20 & 21.	
Westport	0.25	1	26	0.25	20	1.5	3	1.5	24	Thunder 19 & 20.	
Warton	0.74	7	21	0.24	18	5.0	3	2.5	26	Thunder 19 & 20.	
Lansdowne	0.20	2	26	0.15	20	3.0	2	2.0	27		
Wyoming	0.60	2	26	0.30	21	2.0	2	2.0	26		
Sydenham	0.41	1	27	0.41	20	6.0	2	5.0	24	Thunder 20.	
Scarboro	0.09	1	24	0.09	19	0.3	5	0.2	30	Thunder 19.	
Wooler	0.40	1	27	0.40	24	1.5	1	1.5	24		
NEW BRUNSWICK											
Point Esquimaux	0.94	8	18	0.39	25	10.7	6	4.2	14		
NOVA SCOTIA											
Port Morien	3.43	6	23	1.10	6	3.0	1	3.0	28		

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF NOVEMBER 1901.

	HOURS ENDING.															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria				0.02	0.10	0.18	0.22	0.25	0.27	0.20	0.16	0.09	0.00			
Nanaimo				0.00	0.01	0.06	0.08	0.23	0.26	0.20	0.22	0.13	0.00			
Agassiz				0.00	0.03	0.09	0.15	0.20	0.25	0.22	0.09	0.03	0.00			
Battleford				0.09	0.17	0.36	0.57	0.53	0.48	0.56	0.51	0.23	0.02			
Indian Head				0.00	0.18	0.46	0.62	0.60	0.60	0.56	0.38	0.22	0.00			
Brandon				0.14	0.12	0.58	0.63	0.67	0.67	0.63	0.57	0.07	0.00			
Winnipeg				0.06	0.36	0.50	0.58	0.56	0.58	0.52	0.48	0.27	0.03			
Woodstock				0.04	0.21	0.31	0.35	0.45	0.45	0.51	0.40	0.43	0.14			
Toronto				0.05	0.37	0.50	0.57	0.50	0.52	0.43	0.48	0.37	0.14			
Lindsay				0.05	0.17	0.29	0.39	0.40	0.49	0.49	0.35	0.24	0.12			
Gravenhurst				0.07	0.22	0.29	0.37	0.42	0.51	0.46	0.48	0.43	0.27			
Kingston				0.09	0.24	0.36	0.37	0.37	0.36	0.39	0.30	0.33	0.08			
Ottawa				0.03	0.21	0.41	0.42	0.43	0.47	0.43	0.42	0.38	0.10			
Montreal				0.00	0.03	0.12	0.16	0.31	0.34	0.36	0.21	0.06	0.00			
Quebec				0.02	0.15	0.17	0.21	0.28	0.33	0.33	0.35	0.36	0.10			
Fredericton				0.06	0.23	0.30	0.35	0.33	0.38	0.34	0.38	0.34	0.13			

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month. (Constant sunshine being 1.)	0.16	0.13	0.11	0.14	0.12	0.18	0.11	0.35	0.42	0.31	0.37	0.13	0.34	0.22	0.24	0.30
Difference from average.	-0.03	-	-0.04	+0.13	-0.17	+0.15	-0.09	+0.09	+0.14	+0.16	-	-0.04	+0.05	-0.07	-	-0.02
Maximum daily amount.	0.88	0.63	0.63	0.98	0.78	0.89	0.82	0.93	0.89	0.70	0.92	0.92	0.82	0.86	0.91	0.93
Date	9	8	8	21	13	19	21	6	10	14	6	8	28	8	9	10
No. of days completely clouded.	14	15	21	3	6	4	8	12	5	7	8	13	8	16	10	15

Aurora recorded:—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. Aweme, III.
2. Estevan, III : Aweme, II : Pictou, IV : Edmonton, IV.
3. St. Peters, II : Gray Hill, IV : Bowsman, IV : Threehills Creek, IV.
4. Rapid City, Hillsdown, III : Wetaskiwin, III : Estevan, IV : Aweme, II : Morden, St. Peters, II : Gray Hill, II : Victoria, II : Beaver Hills W., II : Quebec, IV : Bowsman, IV : Threehills Creek, III : Edmonton, IV : Lloydminster, II.
5. Cartwright, III : Rapid City, Deloraine, Georgetown, IV : Savanne, Bruce Mines, IV : Hillsdown, II : Wetaskiwin, III : Treherne, Aweme, III : St. Peters, IV : Gray Hill, IV : Beaver Hills W., II : Gravenhurst, II : Renfrew, III : Bowsman, IV, Foxleigh.
6. Foxleigh : St. Peters W. Threehills Creek W.
7. Rapid City, St. Peters, IV.
- 9th Foxleigh.
13. St. Peters, II : Gravenhurst, III.
14. Georgetown, IV : Rat Portage, IV. Foxleigh.
15. Savanne, Rat Portage, Hillsdown, IV : White Horse, Swift Current, Threehills Creek, III : Edmonton, II. Channel Island, III.
16. Rapid City, North Bruce, III : Bruce Mines, II : Treherne, Aweme, II : St. Peters, I : Edmonton, IV : Gravenhurst, II : Qu'Appelle, III : Battleford, II : Swift Current, Port Arthur, III., Bowsman, IV. Foxleigh.
17. Rapid City, Savanne, Estevan, II : Aweme, III : Hillview, II : St. Peters, I : Minnedosa, II : Bowsman, IV : Threehills Creek, III.
18. Rapid City, St. Peters, I., Renfrew, IV : Bowsman, IV.
21. Lloydminster, IV.
29. Hillview, IV : Bowsman, IV.
30. Rapid City, Hillsdown, IV : Hillview, IV.

Thunder recorded on :

2. Calvin.
3. Fredericton.
4. Sable Island.
15. Clayoquot.
16. Bamfield.
19. Alberni, Madoc, Bala, Agincourt, Haliburton, Beatrice, Owen Sound, Coldwater, Ursa, Rocklyn, Lucknow, Meaford, Midland, Emsdale, Georgetown, Uxbridge, Westport, Warton, Scarborough, Nanaimo, Gravenhurst, Saugeen, Parry Sound, Rivers Inlet, Calvin.
20. Madoc, Clinton, Sutton, Lakefield, Kinnmount, Lion's Head, Smiths Falls, Arden, Deer Park, Croydon, Westport, Sydenham, Deseronto, Rockcliffe.
21. Nelson, Sutton, Lakefield, Arden, Croydon.

FORECASTS FOR NOVEMBER, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1133. These was divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			Per- centage.
		No. Fully	No. Partly	No. Not	
Manitoba	84	52	7	5	89.9
Lake Superior	117	85	17	14	89.8
Lower Lake Region	122	108	7	7	91.4
Georgian Bay	121	100	12	9	87.6
Ottawa Valley.	110	91	12	7	88.2
Upper St. Lawrence	110	94	13	3	91.4
Lower St. Lawrence	115	100	7	8	89.1
Gulf.	117	83	20	14	79.5
Maritime Provinces, West	119	106	11	12	85.3
Maritime Provinces, East.	118	91	18	9	84.7
Total	1133	920	124	89	86.7

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto,
27th December, 1904.

DEPARTMENT OF MARINE AND FISHERIES, CANADA.

METEOROLOGICAL SERVICE.

Monthly Weather Review.

VOL. XXVIII.

DECEMBER, 1904.

No. 12.

INTRODUCTION.

In compiling the present Review the principal data made use of are the telegraphic reports of observations received at this office for the purpose of weather forecasting, and reports by mail from voluntary observers and storm signal agents. For the material used in tracing the paths of areas of high and low pressure in the United States, we are indebted to the Chief of the Weather Bureau, Washington, D.C.

REMARKS UPON THE WEATHER.

The weather in British Columbia did not depart much from the normal, it was, however, somewhat milder and wetter than usual in most districts. Over the Lower Mainland and Islands there was much cloudiness, more especially from the 6th to 20th, when rain occurred almost every day. Over the Upper Mainland clouded skies were even more continuous than further westward, and after the 8th snow was frequently recorded. On the 31st the mountains were well covered with snow and there was a light covering on the lower levels of the Province.

In the North-west Territories the weather was somewhat mild and the precipitation in the northern and eastern portions was excessive. Up to about the 20th the temperature was generally between 30° and 40° in Alberta and rather lower elsewhere. After this date much lower temperatures prevailed until the 28th when there was a quick return to even milder conditions than at an earlier date. During the first and last week bright sunshine was almost continuous and throughout the greater portion of the month the weather was fair. On the 31st there was a light covering of snow and the thickness of the ice on rivers was about ten inches.

The weather conditions in Manitoba with a few exceptions were somewhat similar to conditions in the Territories, it being mostly milder than usual with excessive precipitation. It was, however, considerably colder throughout the month than in the Territories. Cold nights when the temperature fell well below zero, and comparatively mild days were features of the month, and from the 18th to 28th it was exceedingly cold. On or about the 22nd a blizzard was reported and the snow drifting left the ground almost bare in many places.

Ontario—The weather in this province was exceedingly cold and the usual periodical thaws were almost absent. In most districts the precipitation which was chiefly snow also departed from the average, it being generally quite light. In the eastern portion of the province bright sunshine exceeded the average, whilst in western counties it was normal. During the first seventeen or eighteen days there was much bright weather, and with the exception of some light falls of snow on or about the 6th, 10th and 13th, there was little precipitation; low temperatures prevailed, however, and from the 9th to 18th zero or below was frequently recorded at many stations. From the 19th to 29th the weather was dull with falls of snow or rain, but it was somewhat milder; and on the last two or three days of the month it was quite mild. In northern and eastern districts sleighing was good throughout the month, and in western counties it was also good up to the 27th; in districts contiguous to Lake Ontario, however, there were not many days on which sleighing was possible. In many places, owing to the light precipitation, wells and cisterns were quite empty until late in the month.

In the Province of Quebec the weather was exceptionally cold, more especially after the first week, and the precipitation was also below the average. Throughout the greater portion of the month there was much bright sunshine, more especially in western districts, but after the 16th the weather was more unsettled and light falls of snow occurred occasionally.

In New Brunswick the weather was unusually fine and cold and the precipitation was considerably below the average. Up to about the 10th, it was comparatively mild when a marked drop in the temperature was recorded, and although it occasionally rose to 20° or higher during the day, it was well below zero on many nights at most places during the remainder of the month. High winds were of

frequent occurrence, but no important gales were reported. Over the greater portion of the province there was a good covering of snow, sleighing being general after the 18th.

The weather conditions in Nova Scotia were similar to conditions in New Brunswick, low temperatures and light precipitation being general. It was, however, much milder in the former province and temperatures below zero were not reported until after the 20th. High winds prevailed and several gales were recorded. In most localities the ground was well covered with snow and sleighing was possible after the 15th.

In Prince Edward Island the weather was exceedingly cold and the precipitation which was only recorded about the 11th and 28th was quite light. From the 1st to 9th the temperature though low at night generally exceeded 30° during the day. After the latter date, however, it was much colder and from the 22nd to 26th temperatures below zero were recorded each night. High winds from the north and north-west and much bright sunshine were features of the weather this month.—F. F. PAYNE.

ATMOSPHERIC PRESSURE.

The mean atmospheric pressure for December exceeded the average amount from Alberta to New Ontario and was deficient elsewhere in Canada. The mean pressure ranged from 30.07 inches at Winnipeg, Man., to 29.71 inches at Port Simpson, B.C., and extremes of departure from average were -0.10 of an inch at New Westminster, B.C. and $+0.08$ of an inch at White River, Ont.

HIGH AREAS.

A large number of areas of high barometric pressure traversed the continent in December, many of them being quite pronounced, and the barometer readings reduced to sea level frequently exceeded 30.50 inches.

The paths assumed were well scattered, but the mean track appears to have been southeast and east from the North-west Territories to the Atlantic.

The most pronounced cold of the month occurred in the Territories and Manitoba between the 24th and 27th, while a very energetic area of high pressure covered that region.

LOW AREAS.

Cyclonic formations were numerous during the month, and in many instances were of great intensity.

The mean path, which the low areas travelled, appears to have been southeast from the North-west Territories to the Upper Mississippi Valley; thence east and north-east and over or south of Nova Scotia.

The depressions which exhibited the greatest energy moved into the North Pacific States on the 24th, accompanied by heavy rains and high winds in British Columbia. It then moved southeastward to the western Gulf States, where it was centred on the morning of the 26th; it thence passed rapidly north-eastward developing great energy, and on the evening of the 27th, was centred near the Georgian Bay, with a barometer reading reduced to sea level of 28.76 inches. The area then continued its way down the St. Lawrence to the Gulf accompanied by gales.

Gales and high winds were of frequent occurrence throughout the month.

BRIGHT SUNSHINE.

From British Columbia to Eastern Ontario the Bright Sunshine recorded was, with local exceptions, below the average; elsewhere the normal was exceeded with a maximum positive departure of 17 % at Fredericton, N.B.

WINDS.

In British Columbia on Vancouver Island and over the mainland the easterly direction predominated. There were ten days with strong and seven with fresh breezes as well as four gales.

In the North-west Territories the south and west directions were most in evidence with seven days of strong and ten of fresh breezes and four gales.

In Manitoba the direction was variable with eleven days of strong and twelve of fresh breezes and two gales.

In the Lake Region the directions were mostly north-west, west and south-west with eight days of strong and eight days of fresh breezes and six gales.

In the Ottawa and St. Lawrence Valleys the directions were likewise, chiefly north-west, west and south-west with seven days of strong and eleven of fresh breezes and two gales.

In the Lower St. Lawrence Valley and the Gulf the north and west directions obtained with eight days of strong and twelve of fresh breezes and five gales.

In the Maritime Provinces the direction was very largely between north and the west with thirteen days of strong and seven of fresh breezes and six gales.

In the Maritime Provinces where winter navigation is pursued, the gales occurred on the 6th, 11th, 13th, 18th, 24th and 28th. None of the storms, however, were very severe. They were all successfully warned.

TEMPERATURE.

The mean temperature of December was higher than the average from Manitoba to the Pacific coast and was lower than average over other parts of the Dominion, the negative departures increasing from 3° in Keewatin to 6° in Algoma, and to 9° or 10° in Eastern Ontario and Western Quebec, and in portions of the Maritime Provinces. In Southwestern Ontario the negative departures ranged between 2° and 6°.

The highest and Lowest temperatures in each Province during December, 1904, were:

British Columbia,	72° +0 on 22nd at Revelstoke,	28° -9 on 25th at Stuart's Lake.
N. W. Territories,	55° +0 on 5th at Onion Lake,	40° +0 on 27th at Manor.
Manitoba,	46° +0 on 29th at Mississippi.	44° +0 on 23rd at Bowsman.
Ontario,	56° +0 on 28th at Welland,	- 17° +5 on 31st at White River.
Quebec,	37° -8 on 1st at Chicoutimi.	- 31° +0 on 25th at Brome.
New Brunswick,	46° +7 on 28th at Grand Manon.	- 27° +0 on 25th at St. Stephen.
Nova Scotia,	52° +5 on 1st at Sable Island.	22° +0 on 26th at Truro.
Prince Edward Island,	46° +0 on 20th at Hamilton.	41° +5 on 25th at Hamilton.

PRECIPITATION.

The precipitation was almost wholly in the form of snow from the Ottawa Valley to the Maritime Provinces, the amount ranging from about 15 inches in the more western districts and in New Brunswick to nearly 30 inches in eastern Nova Scotia.

In Southwestern Ontario the precipitation was very generally less than average, part snow and part rain, the latter occurring chiefly on the 27th. In Manitoba the snowfall was between 10 and 16 inches, and in the Territories ranged from 2 inches in Southern Alberta to about 10 inches in Northern Alberta and Eastern Assiniboia. In British Columbia the rainfall was decidedly heavy on Vancouver Island and the Lower Mainland, with also a few inches of snow, while on the Upper Mainland there were a few moderate snowfalls and less rain.

W. T. THERMOMETER - Cms.										
	31	30	29	28	27	26	25	24	23	
Boise	10 11.35	15 12	20 03	25 30	30 11.38	19 8	11 11.35	7	19 4	26 19.8
Boise	20 21.05	27 17.5	32 10 11.6	37 10 11.6	42 10 11.6	47 10 11.6	52 10 11.6	57 10 11.6	62 10 11.6	67 10 11.6
Boise	70 25 10 11.6	75 20 11.6	80 15 11.6	85 10 11.6	90 5 11.6	95 0 11.6	100 5 11.6	105 10 11.6	110 15 11.6	115 20 11.6
Boise	120 25 10 11.6	125 20 11.6	130 15 11.6	135 10 11.6	140 5 11.6	145 0 11.6	150 5 11.6	155 10 11.6	160 15 11.6	165 20 11.6
Boise	170 25 10 11.6	175 20 11.6	180 15 11.6	185 10 11.6	190 5 11.6	195 0 11.6	200 5 11.6	205 10 11.6	210 15 11.6	215 20 11.6
Boise	220 25 10 11.6	225 20 11.6	230 15 11.6	235 10 11.6	240 5 11.6	245 0 11.6	250 5 11.6	255 10 11.6	260 15 11.6	265 20 11.6
Boise	270 25 10 11.6	275 20 11.6	280 15 11.6	285 10 11.6	290 5 11.6	295 0 11.6	300 5 11.6	305 10 11.6	310 15 11.6	315 20 11.6
Boise	320 25 10 11.6	325 20 11.6	330 15 11.6	335 10 11.6	340 5 11.6	345 0 11.6	350 5 11.6	355 10 11.6	360 15 11.6	365 20 11.6
Boise	370 25 10 11.6	375 20 11.6	380 15 11.6	385 10 11.6	390 5 11.6	395 0 11.6	400 5 11.6	405 10 11.6	410 15 11.6	415 20 11.6
Boise	420 25 10 11.6	425 20 11.6	430 15 11.6	435 10 11.6	440 5 11.6	445 0 11.6	450 5 11.6	455 10 11.6	460 15 11.6	465 20 11.6
Boise	470 25 10 11.6	475 20 11.6	480 15 11.6	485 10 11.6	490 5 11.6	495 0 11.6	500 5 11.6	505 10 11.6	510 15 11.6	515 20 11.6
Boise	520 25 10 11.6	525 20 11.6	530 15 11.6	535 10 11.6	540 5 11.6	545 0 11.6	550 5 11.6	555 10 11.6	560 15 11.6	565 20 11.6
Boise	570 25 10 11.6	575 20 11.6	580 15 11.6	585 10 11.6	590 5 11.6	595 0 11.6	600 5 11.6	605 10 11.6	610 15 11.6	615 20 11.6
Boise	620 25 10 11.6	625 20 11.6	630 15 11.6	635 10 11.6	640 5 11.6	645 0 11.6	650 5 11.6	655 10 11.6	660 15 11.6	665 20 11.6
Boise	670 25 10 11.6	675 20 11.6	680 15 11.6	685 10 11.6	690 5 11.6	695 0 11.6	700 5 11.6	705 10 11.6	710 15 11.6	715 20 11.6
Boise	720 25 10 11.6	725 20 11.6	730 15 11.6	735 10 11.6	740 5 11.6	745 0 11.6	750 5 11.6	755 10 11.6	760 15 11.6	765 20 11.6
Boise	770 25 10 11.6	775 20 11.6	780 15 11.6	785 10 11.6	790 5 11.6	795 0 11.6	800 5 11.6	805 10 11.6	810 15 11.6	815 20 11.6
Boise	820 25 10 11.6	825 20 11.6	830 15 11.6	835 10 11.6	840 5 11.6	845 0 11.6	850 5 11.6	855 10 11.6	860 15 11.6	865 20 11.6
Boise	870 25 10 11.6	875 20 11.6	880 15 11.6	885 10 11.6	890 5 11.6	895 0 11.6	900 5 11.6	905 10 11.6	910 15 11.6	915 20 11.6
Boise	920 25 10 11.6	925 20 11.6	930 15 11.6	935 10 11.6	940 5 11.6	945 0 11.6	950 5 11.6	955 10 11.6	960 15 11.6	965 20 11.6
Boise	970 25 10 11.6	975 20 11.6	980 15 11.6	985 10 11.6	990 5 11.6	995 0 11.6	1000 5 11.6	1005 10 11.6	1010 15 11.6	1015 20 11.6
Boise	1020 25 10 11.6	1025 20 11.6	1030 15 11.6	1035 10 11.6	1040 5 11.6	1045 0 11.6	1050 5 11.6	1055 10 11.6	1060 15 11.6	1065 20 11.6
Boise	1070 25 10 11.6	1075 20 11.6	1080 15 11.6	1085 10 11.6	1090 5 11.6	1095 0 11.6	1100 5 11.6	1105 10 11.6	1110 15 11.6	1115 20 11.6
Boise	1120 25 10 11.6	1125 20 11.6	1130 15 11.6	1135 10 11.6	1140 5 11.6	1145 0 11.6	1150 5 11.6	1155 10 11.6	1160 15 11.6	1165 20 11.6
Boise	1170 25 10 11.6	1175 20 11.6	1180 15 11.6	1185 10 11.6	1190 5 11.6	1195 0 11.6	1200 5 11.6	1205 10 11.6	1210 15 11.6	1215 20 11.6
Boise	1220 25 10 11.6	1225 20 11.6	1230 15 11.6	1235 10 11.6	1240 5 11.6	1245 0 11.6	1250 5 11.6	1255 10 11.6	1260 15 11.6	1265 20 11.6
Boise	1270 25 10 11.6	1275 20 11.6	1280 15 11.6	1285 10 11.6	1290 5 11.6	1295 0 11.6	1300 5 11.6	1305 10 11.6	1310 15 11.6	1315 20 11.6
Boise	1320 25 10 11.6	1325 20 11.6	1330 15 11.6	1335 10 11.6	1340 5 11.6	1345 0 11.6	1350 5 11.6	1355 10 11.6	1360 15 11.6	1365 20 11.6
Boise	1370 25 10 11.6	1375 20 11.6	1380 15 11.6	1385 10 11.6	1390 5 11.6	1395 0 11.6	1400 5 11.6	1405 10 11.6	1410 15 11.6	1415 20 11.6
Boise	1420 25 10 11.6	1425 20 11.6	1430 15 11.6	1435 10 11.6	1440 5 11.6	1445 0 11.6	1450 5 11.6	1455 10 11.6	1460 15 11.6	1465 20 11.6
Boise	1470 25 10 11.6	1475 20 11.6	1480 15 11.6	1485 10 11.6	1490 5 11.6	1495 0 11.6	1500 5 11.6	1505 10 11.6	1510 15 11.6	1515 20 11.6
Boise	1520 25 10 11.6	1525 20 11.6	1530 15 11.6	1535 10 11.6	1540 5 11.6	1545 0 11.6	1550 5 11.6	1555 10 11.6	1560 15 11.6	1565 20 11.6
Boise	1570 25 10 11.6	1575 20 11.6	1580 15 11.6	1585 10 11.6	1590 5 11.6	1595 0 11.6	1600 5 11.6	1605 10 11.6	1610 15 11.6	1615 20 11.6
Boise	1620 25 10 11.6	1625 20 11.6	1630 15 11.6	1635 10 11.6	1640 5 11.6	1645 0 11.6	1650 5 11.6	1655 10 11.6	1660 15 11.6	1665 20 11.6
Boise	1670 25 10 11.6	1675 20 11.6	1680 15 11.6	1685 10 11.6	1690 5 11.6	1695 0 11.6	1700 5 11.6	1705 10 11.6	1710 15 11.6	1715 20 11.6
Boise	1720 25 10 11.6	1725 20 11.6	1730 15 11.6	1735 10 11.6	1740 5 11.6	1745 0 11.6	1750 5 11.6	1755 10 11.6	1760 15 11.6	1765 20 11.6
Boise	1770 25 10 11.6	1775 20 11.6	1780 15 11.6	1785 10 11.6	1790 5 11.6	1795 0 11.6	1800 5 11.6	1805 10 11.6	1810 15 11.6	1815 20 11.6
Boise	1820 25 10 11.6	1825 20 11.6	1830 15 11.6	1835 10 11.6	1840 5 11.6	1845 0 11.6	1850 5 11.6	1855 10 11.6	1860 15 11.6	1865 20 11.6
Boise	1870 25 10 11.6	1875 20 11.6	1880 15 11.6	1885 10 11.6	1890 5 11.6	1895 0 11.6	1900 5 11.6	1905 10 11.6	1910 15 11.6	1915 20 11.6
Boise	1920 25 10 11.6	1925 20 11.6	1930 15 11.6	1935 10 11.6	1940 5 11.6	1945 0 11.6	1950 5 11.6	1955 10 11.6	1960 15 11.6	1965 20 11.6
Boise	1970 25 10 11.6	1975 20 11.6	1980 15 11.6	1985 10 11.6	1990 5 11.6	1995 0 11.6	2000 5 11.6	2005 10 11.6	2010 15 11.6	2015 20 11.6
Boise	2020 25 10 11.6	2025 20 11.6	2030 15 11.6	2035 10 11.6	2040 5 11.6	2045 0 11.6	2050 5 11.6	2055 10 11.6	2060 15 11.6	2065 20 11.6
Boise	2070 25 10 11.6	2075 20 11.6	2080 15 11.6	2085 10 11.6	2090 5 11.6	2095 0 11.6	2100 5 11.6	2105 10 11.6	2110 15 11.6	2115 20 11.6
Boise	2120 25 10 11.6	2125 20 11.6	2130 15 11.6	2135 10 11.6	2140 5 11.6	2145 0 11.6	2150 5 11.6	2155 10 11.6	2160 15 11.6	2165 20 11.6
Boise	2170 25 10 11.6	2175 20 11.6	2180 15 11.6	2185 10 11.6	2190 5 11.6	2195 0 11.6	2200 5 11.6	2205 10 11.6	2210 15 11.6	2215 20 11.6
Boise	2220 25 10 11.6	2225 20 11.6	2230 15 11.6	2235 10 11.6	2240 5 11.6	2245 0 11.6	2250 5 11.6	2255 10 11.6	2260 15 11.6	2265 20 11.6
Boise	2270 25 10 11.6	2275 20 11.6	2280 15 11.6	2285 10 11.6	2290 5 11.6	2295 0 11.6	2300 5 11.6	2305 10 11.6	2310 15 11.6	2315 20 11.6
Boise	2320 25 10 11.6	2325 20 11.6	2330 15 11.6	2335 10 11.6	2340 5 11.6	2345 0 11.6	2350 5 11.6	2355 10 11.6	2360 15 11.6	2365 20 11.6
Boise	2370 25 10 11.6	2375 20 11.6	2380 15 11.6	2385 10 11.6	2390 5 11.6	2395 0 11.6	2400 5 11.6	2405 10 11.6	2410 15 11.6	2415 20 11.6
Boise	2420 25 10 11.6	2425 20 11.6	2430 15 11.6	2435 10 11.6	2440 5 11.6	2445 0 11.6	2450 5 11.6	2455 10 11.6	2460 15 11.6	2465 20 11.6
Boise	2470 25 10 11.6	2475 20 11.6	2480 15 11.6	2485 10 11.6	2490 5 11.6	2495 0 11.6	2500 5 11.6	2505 10 11.6	2510 15 11.6	2515 20 11.6
Boise	2520 25 10 11.6	2525 20 11.6	2530 15 11.6	2535 10 11.6	2540 5 11.6	2545 0 11.6	2550 5 11.6	2555 10 11.6	2560 15 11.6	2565 20 11.6
Boise	2570 25 10 11.6	2575 20 11.6	2580 15 11.6	2585 10 11.6	2590 5 11.6	2595 0 11.6	2600 5 11.6	2605 10 11.6	2610 15 11.6	2615 20 11.6
Boise	2620 25 10 11.6	2625 20 11.6	2630 15 11.6	2635 10 11.6	2640 5 11.6	2645 0 11.6	2650 5 11.6	2655 10 11.6	2660 15 11.6	2665 20 11.6
Boise	2670 25 10 11.6	2675 20 11.6	2680 15 11.6	2685 10 11.6	2690 5 11.6	2695 0 11.6	2700 5 11.6	2705 10 11.6	2710 15 11.6	2715 20 11.6
Boise	2720 25 10 11.6	2725 20 11.6	2730 15 11.6	2735 10 11.6	2740 5 11.6	2745 0 11.6	2750 5 11.6	2755 10 11.6	2760 15 11.6	2765 20 11.6
Boise	2770 25 10 11.6	2775 20 11.6	2780 15 11.6	2785 10 11.6	2790 5 11.6	2795 0 11.6	2800 5 11.6	2805 10 11.6	2810 15 11.6	2815 20 11.6
Boise	2820 25 10 11.6	2825 20 11.6	2830 15 11.6	2835 10 11.6	2840 5 11.6	2845 0 11.6	2850 5 11.6	2855 10 11.6	2860 15 11.6	2865 20 11.6
Boise	2870 25 10 11.6	2875 20 11.6	2880 15 11.6	2885 10 11.6	2890 5 11.6	2895 0 11.6	2900 5 11.6	2905 10 11.6	2910 15 11.6	2915 20 11.6
Boise	2920 25 10 11.6	2925 20 11.6	2930 15 11.6	2935 10 11.6	2940 5 11.6	2945 0 11.6	2950 5 11.6	2955 10 11.6	2960 15 11.6	2965 20 11.6
Boise	2970 25 10 11.6	2975 20 11.6	2980 15 11.6	2985 10 11.6	2990 5 11.6	2995 0 11.6	3000 5 11.6	3005 10 11.6	3010 15 11.6	3015 20 11.6
Boise	3020 25 10 11.6	3025 20 11.6	3030 15 11.6	3035 10 11.6	3040 5 11.6	3045 0 11.6	3050 5 11.6	3055 10 11.6	3060 15 11.6	3065 20 11.6
Boise	3070 25 10 11.6	3075 20 11.6	3080 15 11.6	3085 10 11.6	3090 5 11.6	3095 0 11.6	3100 5 11.6	3105 10 11.6	3110 15 11.6	3115 20 11.6
Boise	3120 25 10 11.6	3125 20 11.6	3130 15 11.6	3135 10 11.6	3140 5 11.6	3145 0 11.6	3150 5 11.6	3155 10 11.6	3160 15 11.6	3165 20 11.6
Boise	3170 25 10 11.6	3175 20 11.6	3180 15 11.6	3185 10 11.6	3190 5 11.6	3195 0 11.6	3200 5 11.6	3205 10 11.6	3210 15 11.6	3215 20 11.6
Boise	3220 25 10 11.6	3225 20 11.6	3230 15 11.6	3235 10 11.6	3240 5 11.6	3245 0 11.6	3250 5 11.6	3255 10 11.6	3260 15 11.6	3265 20 11.6
Boise	3270 25 10 11.6	3275 20 11.6	3280 15 11.6	3285 10 11.6	3290 5 11.6	3295 0 11.6	3300 5 11.6	3305 10 11.6	3310 15 11.6	3315 20 11.6
Boise	3320 25 10 11.6	3325 20 11.6	3330 15 11.6	3335 10 11.6	3340 5 11.6	3345 0 11.6	3350 5 11.6	3355 10 11.6	3360 15 11.6	3365 20 11.6
Boise	3370 25 10 11.6	3375 20 11.6	3380 15 11.6	3385 10 11.6	3390 5 11.6	3395 0 11.6	3400 5 11.6	3405 10 11.6	3410 15 11.6	3415 20 11.6
Boise	3420 25 10 11.6	3425 20 11.6	3430 15 11.6	3435 10 11.6						

PRECIPITATION AT STATIONS REPORTING RAIN, SNOW, WEATHER, &c., DURING
DECEMBER, 1904.

STATION	RAIN FALL					SNOW FALL					REMARKS
	Amount in inches	No. of Days, 50. or Over	No. of Fair Days	Heaviest Fall in Month	Date	Amount in inches	No. of Days	Heaviest Fall in Month	Date		
	in.			in.		in.		in.			
BRITISH COLUMBIA—											
Nanaimo	10.41	18	13	2.27	14	2.5	2	2.0	20		
Alberni	13.81	18	10	2.33	28	7.6	1	4.3	22		
Sooke Lake	16.78	23	6	2.43	15	10.4	1	5.3	22		
Goldstream Lake	12.97	20	4	1.49	14	31.0	7	12.0	21		
Coquitlam	12.11	14	16	3.40	28	2.0	2	1.5	22		
Nass Harbour	9.22	18	11	1.31	15	7.0	2	4.0	27		
Royal Oak	7.98	18	12	2.60	14	0.3	1	0.3	23		
Port Essington..	10.28	22	8	1.97	16	11.0	3	7.0	17		
N. W. TERRITORIES—											
Stirling			20			3.0	2	2.0	20		
Bruderheim	0.03	2	25	0.02	30	7.5	4	4.0	1		
Victoria	0.15	2	25	0.10	28	4.0	3	1.5	21	Fog 31.	
Lacombe			22			2.6	5	2.6	11		
Beaver Hills, W.	0.03	1	25	0.03	7	2.4	4	1.5	22		
Industial			26			6.4	5	2.5	1	Aurora 26, 28, 29.	
Regina	R		24	R	17	2.6	6	1.2	22		
Beaver Hills			27			5.0	3	4.0	3-4		
Port Hills			26			5.0	5	2.0	23		
Last Mountain..			27			12.0	4	6.0	17-18		
MANITOBA—											
Belmont			23				8				
Norway			25			2.0	4	1.0	24		
Gretina	R		24	R	17	17.7	7	10.0	19		
Deloraine.			26			4.3	5	1.5	21	22 Violent gale from N. E.	
Rapid City			10			16.3	21	12.0	22	22 Blizzard.	
ONTARIO											
Westport			24			13.7	7	3.3	8		
Durton	1.00	2	24	1.00	26	5.5	3	2.5	11		
Ennismore	R		24	R	27	13.0	6	5.0	20		
Uxbridge	0.46	1	22	0.46	27	12.0	8	1.5	20		
Geberick	0.50	1	23	0.50	26	28.0	7	10.0	20		
Scarboro	0.58	1	18	0.58	27	5.1	5	2.0	20		
Sydenham			23			17.5	7	6.0	19		
Westminster.	2.01	2	20	2.01	27	15.0	7	5.0	20		
Parma	0.71	2	23	0.51	28	14.0	6	4.0	21		
Deer Park.	0.37	2	25	0.37	26	5.6	6	3.3	13		
Princeton	1.13	2	21	1.13	26	19.3	8	8.0	19-20		
Monticello	0.19	1	24	0.19	31	8.5	6	3.0	12		
Lansdowne	0.86	2	24	0.45	27	9.0	5	3.0	8		
Sudbys Falls	0.50	1	24	0.50	31	12.0	6	3.0	28		
Arden			26			19.0	11	3.0	24		
Midland			18			36.0	13	10.0	20		
Georgetown	1.21	4	11	1.15	26	10.6	16	4.0	20		
Croydon	0.75	4	26	0.75	27	15.0	4	5.0	19		
Orange, Ont.	1.15	2	16	1.09	28	8.6	13	2.1	21		
Ayrton	0.41	1	23	0.51	27	10.1	7	4.0	20		
Windsor	0.17	1	11	0.17	28	18.0	16	2.5	7		
Windsor, Ont.	0.75	1	25	0.75	27	11.0	6	3.0	8		
Windsor	0.21	1	26	0.21	27	9.0	5	4.0	20		
Windsor	0.57	1	27	0.60	27	6.0	2	4.0	12		
Uxbridge	1.22	3	19	0.96	27	21.0	9	4.0	12		
Jerny	11		21	11	26	11.0	9	6.0	9		
Summers	0.10	1	16	0.21	27	18.0	12	3.0	20		
Windsor	0.85	2	5	0.74	27	28.7	24	5.0	11		
Lions Head	0.37	3	15	0.16	22	25.6	13	5.0	8		
NEW BRUNSWICK											
Port Essington	0.01	1	24	0.03	28	15.5	7	4.2	28		
NOVA SCOTIA											
Port Mouton	1.10	3	24	0.58	9	14.0	4	6.0	18		

PROPORTION OF BRIGHT SUNSHINE REGISTERED IN EACH HOUR OF THE DAY DURING WHICH THE SUN WAS ABOVE THE HORIZON IN THE MONTH OF DECEMBER, 1901.

	HOURS ENDING															
	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.
Victoria				0.00	0.01	0.06	0.16	0.19	0.19	0.17	0.11	0.01				
Nanaimo				0.00	0.00	0.05	0.16	0.10	0.08	0.11	0.11	0.08				
Agassiz				0.00	0.01	0.15	0.06	0.05	0.05	0.05	0.03	0.02				
Battleford				0.01	0.26	0.42	0.44	0.40	0.43	0.37	0.39	0.29	0.04			
Indian Head				0.00	0.00	0.24	0.27	0.26	0.41	0.47	0.32	0.10				
Brandon				0.00	0.14	0.29	0.42	0.35	0.31	0.30	0.18	8.				
Winnipeg				0.00	0.05	0.23	0.31	0.38	0.35	0.31	0.16	0.02				
Woodstock				0.00	0.09	0.15	0.22	0.27	0.27	0.25	0.22	0.12	0.01			
Toronto				0.00	0.13	0.18	0.25	0.33	0.38	0.37	0.32	0.23	0.03			
Lindsay				0.01	0.11	0.19	0.28	0.34	0.26	0.29	0.15	0.09	0.01			
Gravenhurst				0.00	0.17	0.29	0.39	0.43	0.45	0.42	0.37	0.27	0.10			
Kingston				0.01	0.10	0.20	0.24	0.28	0.28	0.29	0.29	0.20	0.01			
Ottawa				0.01	0.09	0.23	0.24	0.33	0.39	0.38	0.37	0.24	0.00			
Montreal				0.00	0.00	0.15	0.38	0.37	0.46	0.40	0.29	0.15	0.02			
Quebec				0.00	0.14	0.38	0.43	0.45	0.55	0.53	0.50	0.28	0.00			
Fredericton				0.00	0.27	0.46	0.63	0.62	0.64	0.65	0.62	0.52	0.01			

	Victoria.	Nanaimo.	Agassiz.	Battleford.	Indian Head.	Brandon.	Winnipeg.	Woodstock.	Toronto.	Lindsay.	Gravenhurst.	Kingston.	Ottawa.	Montreal.	Quebec.	Fredericton.
Mean proportion for month. (Constant sunshine being 1.)	0.11	0.09	0.04	0.16	0.26	0.27	0.22	0.18	0.25	0.21	0.33	0.21	0.25	0.29	0.38	0.50
Difference from average.	-0.05	-	-0.10	-0.08	+0.02	-0.08	-0.13	-0.02	-0.02	0.00		-0.04	-0.08	+0.03		+0.17
Maximum daily amount.	0.35	0.59	0.33	0.97	0.73	0.84	0.76	0.64	0.81	0.87	0.89	0.82	0.82	0.81	0.81	0.91
Date	21	21	5	25	18	27	13	16	3	3	13	1	9	2	6	4
No. of days completely clouded.	11	20	22	7	13	13	16	18	8	14	10	17	11	12	9	8

Aurora recorded :—

Where the class of aurora is noted by the observer, it is given, (I) being the brightest, (IV) the feeblest in brilliancy.

1. Minnedosa, II ; Threehills Creek, IV.
2. Threehills Creek, IV.
3. Gray Hill, IV ; Threehills Creek, III.
4. Hillview, IV ; Threehills Creek, IV.
5. Gray Hill, IV ; Morden, Threehills Creek, IV.
9. Edmonton, Georgetown, IV ; Truro, IV.
13. Threehills Creek, IV.
14. Gravenhurst, I ; Truro, IV.
16. Prince Albert, II.
25. Lloydminster, IV.
28. Gray Hill, IV ; Beaver Hills W., II ; Threehills Creek, III.
29. Gray Hill, IV ; Aweme, IV ; Cartwright, III ; Beaver Hills W., III ; Threehills Creek.

FORECASTS FOR DECEMBER, 1904.

The forecasts issued by this office at 11 p.m. each night, are posted up at every telegraph station in Canada, and are for the 24 hours beginning at 8 a.m. the following day.

The number of predictions issued during the month was 1191. These were divided as follows :—

DISTRICT.	No. Issued.	VERIFIED.			
		No. Fully	No. Partly	No. Not	Per- centage.
Manitoba	85	68	11	6	86.5
Lake Superior	101	83	11	7	87.6
Lower Lake Region	126	101	13	12	85.3
Georgian Bay	127	95	22	10	83.5
Ottawa Valley.	119	83	18	18	77.3
Upper St. Lawrence	119	81	25	10	81.1
Lower St. Lawrence.	127	101	16	10	85.8
Gulf.	127	110	9	8	90.2
Maritime Provinces, West	130	97	16	17	80.8
Maritime Provinces, East.	130	93	21	16	79.6
Total	1191	915	162	114	83.6

In order to obtain the percentage of verification of the predictions, the number partly verified is divided by two and added to the number fully verified, and the result divided by the total number issued.

In ascertaining to what extent the predictions have been verified, the reports from the agents at all observing stations, as well as the telegraphic reports, are used.

R. F. STUPART,
Director.

Meteorological Office, Toronto,
26th January, 1905.

P
Astron.
Can.

Canada. Meteorological Service

Author

Title Monthly weather review 1904

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